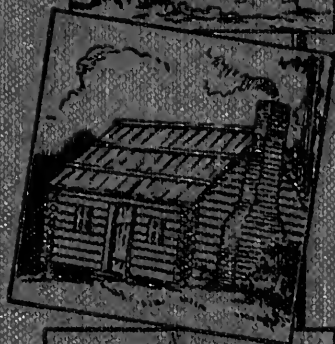


THE HOME

and its
Relation
to the
World



By
**Harold W.
Fairbanks**

Author of
The New Progressive Geographies

HARR WAGNER PUBLISHING CO.



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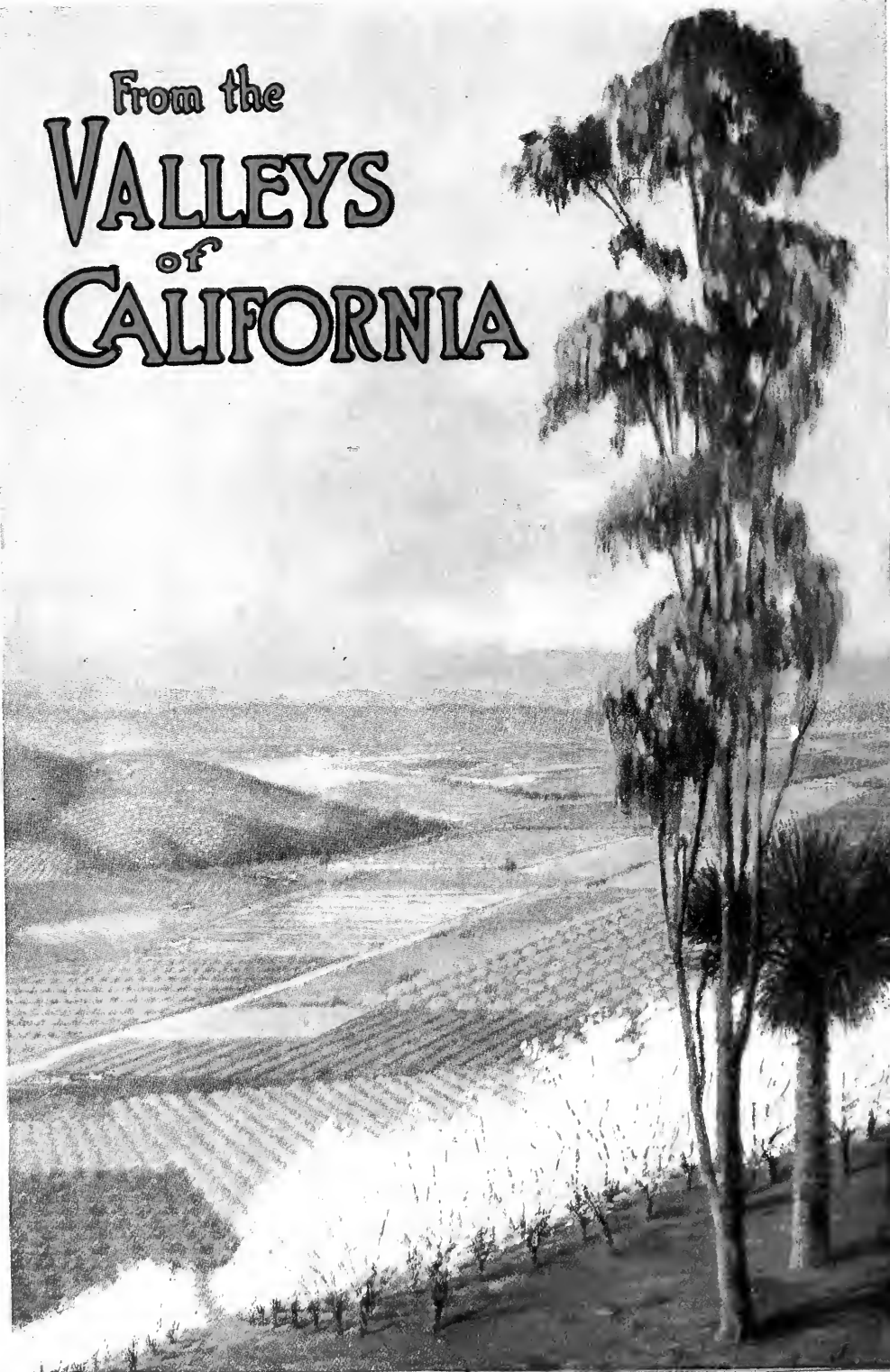
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The Golden Gate, the latch string which is always out for the ships that come and go, bringing us into social and commercial relations with the homes of the world.



From the
VALLEYS
of
CALIFORNIA



Homes Among the Almond Groves of California

FAIRBANKS'
NEW PROGRESSIVE GEOGRAPHIES
DEVELOPED ACCORDING TO THE PROBLEM METHOD

THE HOME

AND ITS

RELATION TO THE WORLD

BY
HAROLD W. FAIRBANKS

Author of

California, Topical Outlines of Europe, Asia, Africa, North and South America, Australia
and the Islands of the Pacific, "Stories of Our Mother Earth," Rocks and Minerals,
Home Geography, Practical Physiography, Conservation Reader,
Western United States

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The Home and Its Relation to the World

PREFACE

The purpose of the present little book, the first of a series of elementary school geographies, is two-fold. It undertakes in the first place to familiarize the child with his environment and to show how his life is affected by it. In the second place it takes him over the World, not a world made up of facts to be memorized, but one filled with strange and interesting people with whom he has more or less to do.

It is not the purpose of the book to teach California but rather **the home in California**, and its relation to other homes scattered over the wide world. As a result of this method the Home is oriented and the pupil led to acquire those simple but fundamental ideas absolutely essential to the real grasp of advanced geography.

The first and second books of the New Progressive Geographies emphasize Home Geography because, in the author's opinion, this is the only approach to World Geography which can give the desired results—results so generally lacking with the methods in current use.

The California child who devotes the fourth and fifth years of school to the home environment and its relation to homes in other lands is equipped as no other child can be, who has never had this intensive home study, to make rapid and intelligent progress in World Geography.

The teacher must bear in mind that as the book is planned for use in any part of California local conditions cannot be emphasized as they ought. Each environment has illustrative material of its own which, following the plan of the book, the teacher should use to the fullest extent possible. By this means, and by making additional journeys among people of other lands—journeys developed along the same lines as those worked out in the book—the teacher will have within her grasp material for a full year's course.

The teacher is urged to give the children out-door lessons in connection with the beginning of map study because of the extreme importance of being able to visualize map symbols. If out-door lessons are not possible a sand table or similar device should be employed.

Mercator maps should **not** be used in beginning World study, but in their place either a globe or a map of the hemispheres. A relief map or model of California, such as the *Drake model which can now be obtained at a reasonable price, is essential to the fullest success of the method employed. Political maps should be avoided.

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ARGUMENT

FOR

The Home and Its Relation to the World

BY

Dr. H. W. Fairbanks

The following plan of a new series of school geographies has been worked out as a result of the conviction on the part of the author that the subject of school geography needs remodeling along new and wholly different lines and that none of the present text-books meet the demand of this more modern and rational view of the subject.

The proposed geographies differ from those now in use in three important particulars, namely:—in method, in distribution of emphasis, and in the handling of the map question.

1. **Method.**—The current texts are based in great part on the idea that geography is a study of facts about the earth. These books are filled with an almost innumerable number of facts which according to the method usually followed are acquired through memorizing with little inquiry into the matter as to whether these facts are really understood.

In the New Series an attempt is made to practically do away with the memorizing of facts as facts. The vast amount of detail found in all the current texts is dispensed with. The thinking powers of the pupils are aroused through the development of the causal relationship which exists among facts, and which relationship alone leads to true geographic knowledge.

One of the primary objects in the method of presentation employed in the new texts is to develop the interest of the pupils through the use of "problems." By this means the otherwise dead facts are clothed with life.

The method of presenting all facts in the light of their natural associations and from the point of view of their influence upon life might be called the "biological method." It not only makes the subject matter of the geography seem worth while to the pupils, a very important thing in itself, but it brings out clearly the scope and bounds of geography, a notion which is lacking in the current texts as well as actual school-room practice.

In the biological method of approach all materials are presented from the standpoint of their relation to the earth as a **living organism**. A mountain, for example, is not studied merely as a physical feature of the earth but from the point of view of its relation to the people who live at its base. Every fact that has any vital relation to elementary school geography is thus made significant.

The two-time-over plan in current use is discarded as it is believed to be wasteful of time and effort and not to lead to the best results. A **progressive** course is substituted for the present one and in this course the world is gone over in a formal manner but once. The objection sometimes raised to this plan that some children may leave school before the continents have all been studied is met by the statement that in the latter half of the fourth year there is a general survey of the world, and that it is of far greater importance that such children should have a working knowledge of their home, state and native land than that this should have been neglected and their time spent in memorizing meaningless facts about distant lands.

2. **Distribution of emphasis:**—To make geographical relations in distant lands really intelligible the new plan not only emphasizes home geography, but goes much farther and assumes that an understanding of the home is the indispensable pre-requisite to a real knowledge of the world. It is only

when the pupils have gained a working knowledge of the relation between the people about them and their environment that they are able to understand the environments of peoples in distant lands.

The extended study of the home called for by the plan of the New Series results in remarkably rapid and intelligent progress when the pupils reach the study of distant lands. The knowledge gained of life relations in the home is carried directly over to the new land, no matter in what part of the world it is situated. When a good map is furnished the pupils they are able to reason out conclusions as to life conditions wherever life is studied.

3. **The problem of map study:**—The New Series of Geographies is to be illustrated with half tones and colored plates but maps are to be excluded from the text-books and bound in a separate volume or **Atlas**. This has long been the established custom in the leading foreign countries, and is likely soon to be the rule in the United States. One of the most serious defects of the current geographical texts is not only the small size of the maps but their usually poor character.

The advantages of an atlas might be stated as follows:—

1. The maps can be printed on a scale large enough to make them clear and comprehensible.

2. The atlas can more easily be preserved as a handy book of reference when not encumbered with the text.

3. The text can be bound in a more conveniently sized volume than when an attempt is made to adapt it to the needs of maps.

4. An atlas bound in one or two parts could be made to last for the whole school course.

The New Geographies can be divided conveniently into four volumes as follows:

Vol. I. **Fourth Grade:**—An elementary text in Home Geography which includes in the latter half a discussion of the peoples of other parts of the world through the interchange of products between them and the people of the California home. This introductory work is made as real as possible through the use of pictures and the globe or map of the hemispheres.

Vol. II. **Fifth Grade:**—California and other parts of our country as they are related to California. A good wall map or relief model a necessity. (A small atlas of California is to be prepared to accompany this Volume.)

Vol. III. **Sixth Grade:**—North America with emphasis laid upon the United States. Physical wall maps a necessity.

Vol. IV. **Seventh and Eighth Grades:**—The remaining portions of the world taken up in that order which brings the most important regions early in the course. North America is naturally followed by South America, Europe, Asia, Africa and Australia.

The Geography of Current Events should be introduced periodically throughout the course.

It is not at all essential that Europe be taught in the Sixth Grade to meet the needs of Sixth Grade history. All the geography which is needed for the history can better be given as a part of the history.

The author has employed the historical development of the different lands as a motive through the series but this does not imply that geography should be made subservient to history as is often done.

WHAT DO WE MEAN BY HOME?

The place where we live with those we love most is home. In our homes we find shelter from cold and wet. There we get our food and clothing. There are our playthings and everything else that we own.

But the *home* that we are going to learn about in our geography is larger than the house in which we live. This home takes in the country around us and all the things with which it is filled. In this home are hills and valleys, water, air, birds, animals and plants. Here also are many people living in different ways and doing different kinds of things.

How far over the hills and valleys does this home land extend? We might think of home as being only the valley in which we live, or we might think of it as our country or even the whole earth. In this little book we are going to learn first about our California home and then about our larger world home and the many peoples that it holds.

HOME IS THE MOST IMPORTANT PLACE IN THE WORLD.

The first thing we want to learn about is the little world close around us, then the larger world of California, and finally the great round world. It will be worth much to us to know what kind of a home we have, what the people about us do and how they live. After learning what we can about our own home we shall then find out what we can about the homes of other people and the far away lands in which they live.

The land, the water, the sun, the wind and storms make our home what it is. These things also determine the kind of work that people do. To know our home will enable us to live better and happier and will also help us to understand the homes and lands of other people.

THE LAND EXTENDS AWAY FROM HOME IN EVERY DIRECTION.

The place in which we live seems to us the centre of the world. Whichever way we look the earth appears to stretch away to the horizon. Each of our homes is in the centre of its own little world. The little worlds about the different homes in our land and in other lands all taken together make up the great world.

THE WORLD MUST BE VERY LARGE.

1. **What a mountain top shows us:** From a hill we can see more of the country than we can from our home in the valley. From a mountain top our view reaches still farther. Thus we discover that the little world in which our home lies is only a part of a very large world. Our California home of which we are going to learn is much larger than that which we can see from the highest mountain. It is so large that it takes an express train more than a whole day of twenty-four hours to go from one end to the other.

2. **Beyond California are other lands:** California is but a small part of our great country—the United States. Our country is only one of many countries which, together with water, make up the surface of the earth. The earth is so large that it takes months of constant traveling to reach the more distant of these countries.

THE WORLD IS THE HOME OF MANY KINDS OF LIVING THINGS.

1. **Plants cannot choose their homes:** Wherever the seeds fall and sprout there the young plants must make their homes. They cannot go in search of food. If the soil is poor and there is little water and sunshine they can do nothing to help themselves but must get along as best they can.

2. **Animals make their homes where they please:** Animals do not have to stay in one place. They can wander here and there and make their homes where they find life the most comfortable. If there is not enough to eat in one place they go to another. When winter comes they either make a warm snug nest or travel far southward.

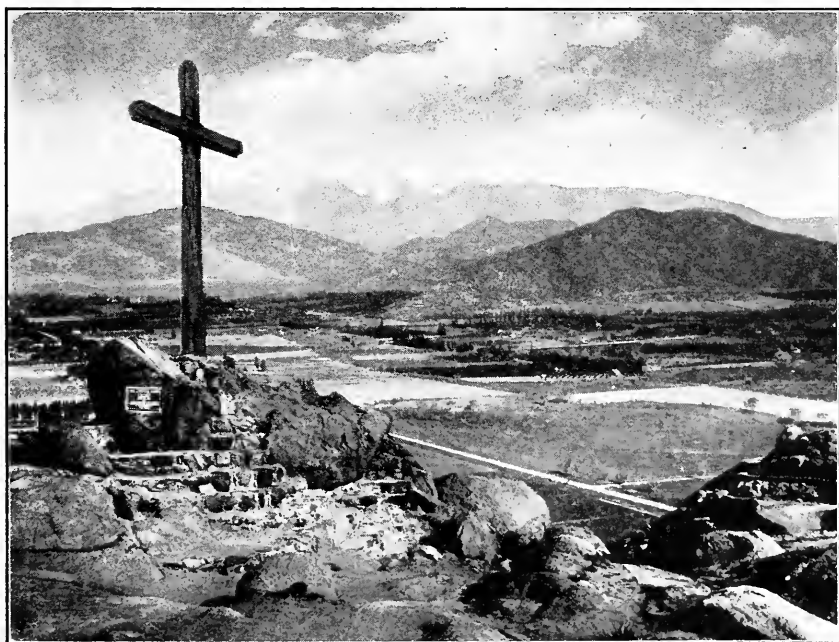
3. **People have permanent homes:** Long ago men were much like the animals. They too had to go from place to place in search of food. Now it is very different. We have learned so much about Nature that we no longer have to move about to obtain food or escape cold. We have harnessed wind, water and electricity and make them work for us. Cultivated fields, orchards and gardens supply us with food from one summer to another. Where it is cold we build comfortable homes and keep fires burning in them. Where it is very hot we make ice to help us endure the heat. We carry food to places where nothing will grow and in this way we are able to live where other animals would die of cold, heat or hunger.

OUR HOMES ARE OF MANY DIFFERENT KINDS.

It makes no difference what sort of a place we live in that place is home. It may be only a tent or it may be a cave in the hillside. Most of our homes are made of sawed lumber because this is usually easy to get and easy to shape in the form which we wish. In some parts of our California home where there are trees but no sawmills we find homes made of logs and roofed with bark. Where wood is scarce and clay is plentiful homes are made of adobe mixed with straw and dried in the sun. Stronger and more permanent homes are made of clay bricks baked in a kiln until they are very hard. Where stone is easily obtained homes and even large business buildings are made of that material.

OUR HOMES ARE IN MANY SORTS OF PLACES.

Some of us live in valleys. Others live among mountains or on the coast. The land around some valley homes is almost as level as a floor and grows rich crops. Where others live the slopes are so steep and rocky that the trees can hardly



From the Hill-Top a rich and beautiful valley lies spread out before us.
Beyond it are mountains white with snow.

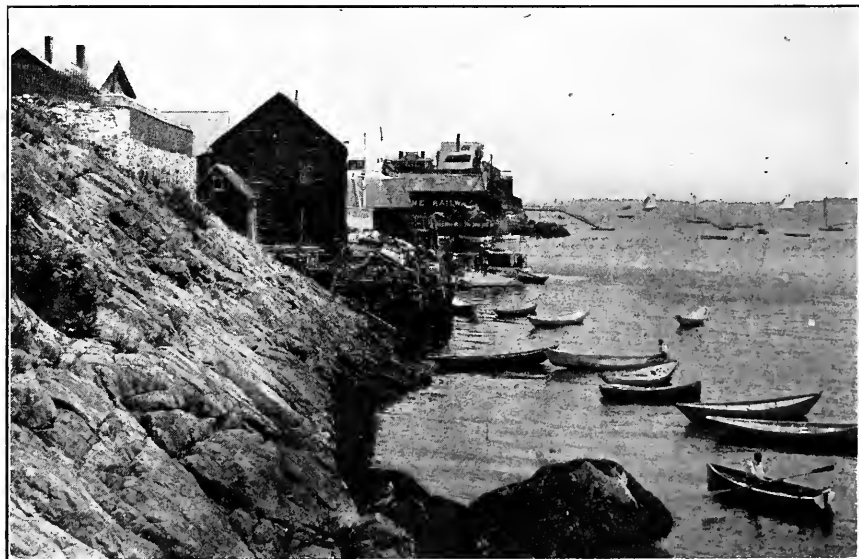
find a place for their roots. It rains so much in some places that children carry their umbrellas to school most of the time. In other places the sun shines out of a bright sky nearly every day in the year. But wherever we go we find that every one likes his own home place the best.

WE WOULD NOT ALL CHOOSE THE SAME SORT OF A PLACE FOR A HOME.

How fortunate it is that we do not all like to have the same sort of a place for a home. If we did there would be great lands where we could travel for days and find nobody. There would be other lands where people would be crowded together so thickly that they could hardly live. Perhaps you like a home where it is warm all the year and where little rain falls. I like a home where the winter cold brings the wonderful snow. And so we find homes all over the earth in all kinds of places.

CALIFORNIA OFFERS EVERY SORT OF A HOME THAT ONE COULD WISH.

1. Some of us have homes upon the coast: Upon one side is the blue ocean; on the other side are hills and mountains. Can you imagine any pleasanter place for a home than the



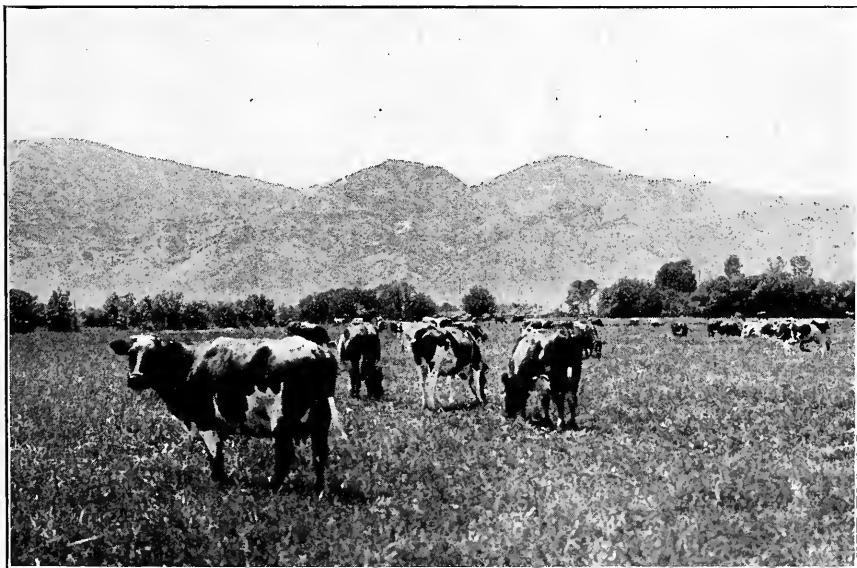
The fisherman must make his home close to the water where he can look after his boats.

strip of fertile land between the mountains and the ocean. The winds almost always blow off the cool water and so it seldom gets very hot. Sometimes we can hardly tell whether it is winter or summer. We often wish that there was not so much fog in the summer and that we might have more sunshine. But we must not forget that the fog is of great value for without it some of our important crops could not be grown.

2. There are many homes in the valleys behind the mountains:

We must not think that it is foggy every where in the summer. If you will climb the mountains back of your coast home you will be able to see warm bright valleys lying beyond them where there is little fog. The fog comes from the ocean and sometimes creeps over the low places in the mountains but the water particles forming it soon disappear in the warm dry air.

The summer days are very warm in these valleys lying behind the mountains. The plants which need the cool moist fog do not grow there but instead there are others that cannot stand the coast air. Less rain falls behind the mountains than upon the side facing the ocean and so the earth dries out more



This is the sort of a valley the dairyman loves. The sleek cows show that there is water and grass in abundance.

quickly. In order to keep their gardens growing the people have to irrigate them from some near-by stream.

3. **Far behind the mountains there are few homes:** If you should journey many miles, beyond these warm and fertile valleys, and across other mountains that lie far to the eastward you would come to a part of California where there is so little rain that scarcely anything will grow. The country looks like a desert. It is so hot in summer that one can scarcely endure it. In the winter there are cold piercing winds. People live in this dry land because there is work to be done there. The water that they need is either brought many miles in pipes or hauled upon wagons or cars. The food that they need is supplied from other more fertile valleys.

4. **There are many homes in the wild mountains:** How we enjoy our mountain home. There are dense forests, lofty cliffs and noisy streams. In summer it is very pleasant living out under the trees. In winter there is coasting on the snow. In the very high mountains it is too cold for gardens to grow, and so the people living there have to go to the warmer valleys for their supplies.

WE MUST MAKE OUR HOMES WHERE OUR WORK CALLS US.

1. **One who is engaged in trade must make his home near other people:** In order to be a successful merchant one must live where there are people with whom he can trade. A store could carry on little business in the country far from the homes of people. A merchant usually, then, makes his home in a town or city where his store can be easily reached. City people depend upon the stores for everything they need. Country people have less need of a store for they raise a large part of their supplies. In order to obtain clothing and other necessities people living far away in the country usually have the large city stores send them goods by mail or express, instead of going to the store.

2. **People wishing to engage in manufacturing must make their homes where such work can be carried on:** To be successful in manufacturing many things are necessary and these are to be had only in certain places. There must be either water power, fuel or electricity to run machinery. There must also be rivers or canals or railroads to bring the raw materials and carry away the articles which are manufactured.

Great mills or factories call for many workmen. These workmen need homes and in the homes many kinds of articles are required. Thus a village or city with all sorts of industries grows up around any place where manufacturing is carried on.

3. If one wishes to be a miner he must live where minerals are found: The minerals which the miner seeks are usually found in the solid rocks. In the valleys deep soil hides the rocks so that we cannot easily get at them but in the hills and mountains there is little soil and the rocks appear upon every hand. For this reason the miner lives in the mountains. The slopes are often so steep and rocky that he can reach his home only over rough and dangerous trails.

4. The lumbermen must make their homes in the forests: The forests of our California home are usually found in the mountains because the valleys are too dry. The lumbermen then, as well as the miners, have to make their homes in the mountains. The mills that cut the logs into lumber are sometimes built in the forests. In such cases the lumber is floated down to the valleys in flumes. When the mills are built in the

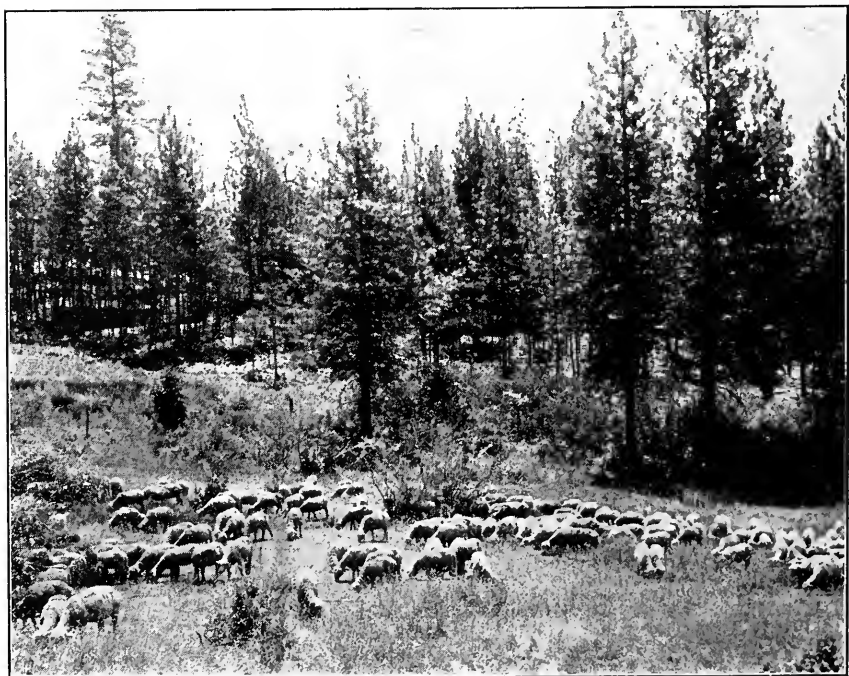


The miner must make his home in the mountains. The mill is built over the entrance to the mine.

valleys the logs are brought upon railroads made for the purpose.

5. **The stockman makes his home in the rough hilly country:** Because rich and well-watered valley land is too valuable for pasturing beef cattle the stockman usually takes his herds to the hills and mountains. Steep and rocky slopes are not suited to farming but support a growth of grass and bushes upon which cattle can feed. In the remote parts of our state you will find large herds of cattle and sheep and bands of horses. The homes of the stockmen are far apart because range cattle have to wander far and wide in their search for food.

6. **The dairyman has a choice of different places for a home:** The dairyman who wishes to sell milk must live as near as possible to some city where customers can be found. The dairyman who makes butter may have his home near the coast where the cool air and green grass are favorable. Or, he may go to a mountain valley for here the nights are cool and the grass is green all summer. Many of the great valleys now



The sheep herder pastures his flocks where the land is not suited to farming.

offer good opportunities for the dairyman if he can get ice to keep his butter cool for there is an abundance of alfalfa.

7. **The grain farmers live in the larger valleys:** The grain farmer, like the stockman, must have a large piece of land. This land should lie in a valley or upon gentle hill slopes so that machinery can be used for plowing, sowing and harvesting. It does not pay to raise grain in rough country where only small patches of land can be sowed and harvested. In a valley given over to raising grain the homes are far apart and without the comforts that come from small pieces of land carefully cultivated.

8. **The home of the sugar beet and bean farmer:** If one prefers to grow beans and sugar beets he will seek some place where the soil is deep and rich and the climate is not too hot as in the valleys near the ocean. In such valleys the damp fogs bring life to the little bean and beet plants.

9. **The grower of temperate fruits may live either in a valley or among the hills:** Many kinds of temperate fruits thrive in the warm valleys. Among these are peaches, apricots and grapes. Others such as pears, prunes and grapes like the hill slopes, while apples do best on the mountains where it is cold



This is a beautiful valley dotted with oaks where a grain farmer has made his home.

in winter. Thus the fruit grower may make his home in a variety of places, the spot that he chooses depending upon the sort of fruit he wishes to grow.

10. If you would grow sub-tropical fruits you must make your home where it is hot in summer and mild in winter: We cannot grow sweet oranges near the ocean where the cool fog winds blow. We cannot grow them in the mountains where the winters are cold. We must seek some warm lowland valley not only for oranges but also for lemons, figs, olives and raisin grapes. We must be careful, however, not to set out orchards in the very lowest parts of the valley for such places are more frosty than the slopes upon the sides of the valley.

11. The date grower must make his home in the hottest valley of California: In the far southeastern corner of California is a broad valley once known as the Colorado Desert. This was for many years the dread of every one who had to cross it. A great canal now carries water to this valley from the Colorado River and thousands of people make their homes there. Among the many products of this almost tropical region that make it known far and wide are cantaloupes and dates. The cantaloupe thrives in other hot valleys of our California home but the date is found to do best here. Sprouts and seeds of the date palm were brought from a similar desert country far away across the ocean. They found in this valley a home which they liked and now are supplying us with the very best of dates.

WHY IS IT SO DIFFICULT TO MAKE HOMES IN SOME PARTS OF CALIFORNIA?

1. In the desert there is too little water: The desert is a wonderful land. In its mountains there are gold, silver and copper. In the bottom of the valleys where there were once lakes, there are beds of soda, salt and borax. Upon the slopes of the valleys there is good soil. The one thing that Mother Nature failed to give the desert is enough water so that people could make homes there.

Once people dreaded the journey across the deserts because of the heat and the danger of dying of thirst. Although we cannot lessen the heat of the summer sun yet we have been able to obtain water in wells in some of the deserts, while we have brought water to others in canals and have turned much of the barren land into fruitful gardens.

2. Some lowlands are too wet: How many children have heard of the vast lowland in the heart of California where two large rivers meet and flow down to San Francisco Bay? For thousands of years the Sacramento and San Joaquin rivers



To grow such sweet dates as these one must live in a valley where there is plenty of water for the roots of the palm and the summer heat is intense.

have been bringing down mud and dropping it at their mouths until they have finally made a marshy plain which extends almost as far as the eye can reach. The surface has a deep rich soil which supports a forest of tules, but during the spring floods much of it was once covered with water, forming a vast lake. No one could make his home in this region until dikes or embankments of earth were made to shut out the floods. Now many people live here and raise fine crops of potatoes, onions, beans and asparagus.

3. It is difficult to make homes in the forests: Most people who live in the country depend upon the soil for a living. Unless you were a lumberman or a miner you would not go into the forest to make a home; the trees would have to be cut down and the stumps pulled out before you could raise anything. This is one of the reasons that few people live upon the forested mountain slopes.

4. In some parts it is very cold: Why do we find so few people living upon the high mountains? The high mountain slopes are very cold in winter and there are frosts almost every night in summer. Because of the cold nothing can be raised there. The miner is the only inhabitant of this region and he has to bring all his food over rough trails from the valleys far below.

5. In some valleys the soil is not suited to growing good crops: How can one be a successful farmer where the soil is poor? The wise farmer examines the soil where he wishes to make a home to find out if there is anything wrong with it. If it does not contain the food that his crops need he goes to the dealer in fertilizers and buys what is required.

In some soils there is so much soda or salt that most sprouting seeds die. Since different plants do not need just the same food and some will thrive where there are substances that will harm others the farmer should try to plant those crops that will do best on his particular farm.



The cabin of the mountaineer is a delightful place in summer but has few of the comforts of the valley home.

EVERY HOME MUST HAVE WATER, FOOD AND SUNSHINE.

No one could live long without food and water. Perhaps you think you could live without sunshine, but you would soon become as pale and weak as the potato vine that grows in a dark cellar. Wherever you wish to make your home, whether it is in the desert, in the high mountains or in a city, you can have food and water brought to you. But you cannot change the amount of warmth and light that the sun affords or the amount of rain that falls. In choosing a place for a home you must think of these things.

THE FARMER MUST MAKE HIS HOME WHERE THERE IS WATER, WARM SUNSHINE AND FERTILE SOIL.

While we all must have food and drink most of us do not have to live where Nature supplies these things. We can make our homes in any place we wish and have what we need shipped to us.

It is the business of the farmer to raise the things we eat. Growing plants need water, warm sunshine, and good soil and therefore the farmer has to live where these are to be had. If one wishes to raise oranges he must seek a sunny valley and not the coast or the mountains. If there is not enough water in the valley it can perhaps be brought in a ditch from some river. If the soil is not just right it can be improved. But one has to take the sun, the clouds, the rain and the winds just as they are for we all know they cannot be changed.

WHERE DOES THE WATER COME FROM?

1. **The winds bring the clouds from the ocean:** Where do the clouds come from? Watch them and you will find that they are flying with the wind. Follow the wind back towards its home and it will take you a long journey to the westward out over the blue ocean. Here is where the clouds start.

Have you not seen many times thin haze coming up from the west and spreading over the sky as a storm approaches? Sometimes the haze is streaked like wisps of hair. At other times it looks like fish scales and we call it a "mackerel sky." The haze is followed by heavy clouds that soon completely hide the sun and, at last, the rain comes.

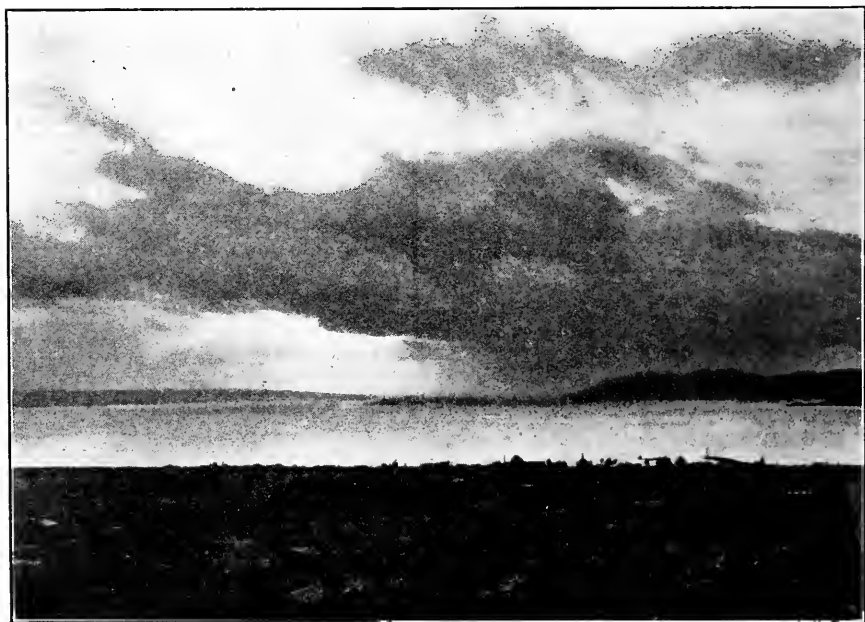
2. **The clouds drop rain or snow:** The rain may fall for hours and sometimes for days. Sometimes it drops quietly;

at other times it is blown by fierce gusts of wind. It seems as though the clouds must loose all their water particles but as long as the wind keeps blowing from the ocean the clouds continue to sail across the sky. If the wind should change and blow from the land toward the ocean the rain would soon stop and the clouds would give place to bright sunlight.

The clouds float far inland over the mountains and valleys, but the farther they go the lighter and thinner they become. If we follow them far enough we shall at last reach dry deserts where the sun is shining brightly.

It is the cold air which the water particles meet as they rise from the ocean to form the clouds that finally sends them down again as raindrops or snowflakes. From almost any home in California you can see what the cold mountain tops do to the clouds. Not only is the storm heavier on the mountains than in the valleys but it also leaves there a white mantle of snow.

All the water around us has come from the clouds. This is the story of the water of the springs, creeks, rivers, ponds and lakes. If it were not for the winds that bring the water



The angry wind-torn clouds coming off the ocean are threatening San Francisco Bay with a shower. Rain is falling from the dark lower portion.

particles from the ocean all the land would be dry and barren, and without any living thing.

3. A part of the rainwater flies away again in the air: What becomes of all the water that falls from the clouds? If it remained on the ground it would in a year form a layer over California from a few inches to five feet in thickness. Let us see what becomes of the water when a storm has passed.

Everything is wet for some time after the raindrops have stopped falling. The top of the ground is soft and full of water. We say that it is muddy. There are rivulets upon the hill slopes and by the roadside. The grasses and trees are loaded with sparkling drops. But what happens now? With the change of the wind to the east or north the air becomes dry again. It gathers up the sparkling drops. It dries our clothing. It slowly takes the water out of a dish. It draws some of the water out of the ground leaving the surface dry and hard. Soon all the little ponds dry up.

The water particles disappear in the dry air as it sweeps over the earth. We say that they *evaporate*. Although they



The creek bank shows how the network of roots helps hold the soil. If it were not for the trees the floods would wash it away and leave the surface barren and rocky.

have now become invisible it may be that in some other place the air will become cold enough so that they will appear again as fog or clouds.

4. A part of the rainwater soaks into the ground and finally forms springs: We must not think that all the rainwater disappears in the air. Another part soaks downward through the



A part of the rain water runs away in beautiful dashing streams. The trees which overshadow it help to keep the wind and the sun from drying it up.

loose earth until it finds the solid rocks. Here and there are tiny crevices in the rocks, and into these the water creeps. The little crevices often lead to larger ones, through which the water moves more easily. In this way very small underground streams are formed. If we followed one of these on its journey it might lead us to a spring, in some near-by gulch or it might take us miles away to some distant valley where it comes to the top of the ground as a clear cold spring. If the water of a spring does not come from very deep in the earth it may grow

less in summer or even dry up. But if there are many little reservoirs far underground which feed the spring it will flow the same throughout the year.

In the desert there are few springs because so little rain

falls. Desert storms are often sudden and severe and are known as "cloudbursts." The water gathers quickly on the mountain slopes, and as there is little soil to hold it the greater part runs away down the canyons.

5. Another part of the rain gathers in rivulets on the slopes: Go out while the rain is falling or soon after it stops and you will find rivulets running down every slope to join some nearby stream.

You will find the rivulets larger where the ground is hard and there is nothing to keep the water from hastening away.

Where the soil is loose and deep, or where there is a carpet of vegetation you will discover but little water for the most of it soaks into the ground at once. The loose earth and decaying plants act like a sponge. This sponge helps to hold the water until it either soaks into the crevices of the rocks which lie below the soil, or until it is carried away in the air.

In many places the ground is hard and so nearly bare that the larger part of the rainwater gathers in rills and flows away. Where the surface of the ground is formed of solid rock all the water flows away. You can see that these things are so by watching the city streets during a storm and comparing the water upon them with the water upon a grassy hillside.

6. The rivulets unite to form rivers and finally reach the ocean: The rainwater carried off by the thirsty air as well as that which soaks into the ground may be a long time getting back to the ocean. But that which escapes through the rivulets and rivers soon reaches its home.

The water particles as they rise from the ocean and start on their journey over the land are perfectly pure. But when the water returns to the ocean it carries with it tiny quantities of many different substances. First there is the earth which it took from the hillsides and which gives the dirty yellow color to the rivers. If you live by the ocean you can see the color of the muddy river water extending far out from shore.

There are other substances in river water that you cannot see. They have been dissolved out of the rocks and the soil. Among them are salt, soda and lime. For many thousands of years the rivers of the world have been carrying salt to the ocean. As none of this escapes with the cloud particles the ocean is little by little becoming more salty. Although the

ocean water looks so pure and clean you will find if you taste it that it is very disagreeable.

HOW WATER RULES OUR LIVES.

1. In choosing a place for a home we inquire first about the water: Our health depends very much upon the kind of water we have to use, and so in choosing a home we should look first to the water supply. In some places the water contains so much salt, soda or lime that it is unfit to drink. In other places the water contains poisonous germs so that it is necessary to boil or filter it.

Sometimes people have to make their homes where water is scarce. It may have to be hauled a long distance in barrels. In such cases it is sold by the gallon or pailfull. Where there are no wells or streams people often dig cisterns to catch the rainwater from the roofs of their houses. If the roofs do not collect enough water a piece of ground is leveled off and cemented. From this the rainwater runs into cisterns. Long ago cisterns were used a great deal, for rainwater is purer than most other water.



This is the home of an old-fashioned California farmer who has no water for irrigation and raises only hay and cattle.

2. **The lack of water has kept people from making homes in parts of California:** If you travel over California you will find places where homes are many miles apart. It may be the land is so rough that it cannot be cultivated but most likely it is because water is scarce. You will see herds of cattle and sheep feeding in such regions because these animals can make a living where there is very little water. Farmers would be very foolish to make homes in such regions unless water could be obtained for irrigation.

Too much water is almost as bad as too little. Vast low-lands along such rivers as the Sacramento have to be protected by embankments before their rich soils can be cultivated. Those of you who live upon the Northwest coast know how wet the winters are there. You know how much work it is for the farmer to clear away the dense vegetation due to the heavy rains before he can prepare the soil for the seed.

3. **The kind of farming one does depends partly upon the amount of water his lands receive:** If you live where there is too little rain for growing crops and no water for irrigation you will have to depend upon stock raising. If you have a great stretch of level land and there is a moderate amount of rain but no water for irrigation you will find the raising of grain will be profitable. If you live where there is an abundance of water for irrigation and the climate is hot you will probably raise oranges, lemons, figs, grapes, etc. If your climate is too cool for oranges there may be orchards of peach, pear, apricot, prune, walnut, cherry and almond trees. Where the land is low and wet there will be green meadows given over to cattle raising and dairying. Dairying will be profitable near the coast where it is damp and foggy. You will also find much land near the coast devoted to raising beans and sugar beets.

4. **Water aids us in traveling and carrying on trade:** If your home is near the Sacramento or San Joaquin rivers you can see what a fine highway water makes. One can travel upon a large smoothly flowing river with nothing to worry about except sand-bars and snags. All one has to do if his farm is on a navigable river is to have a passing steamer take his produce to market and bring back the needed supplies.

If you live upon the coast you will see steamers and sailing vessels going past upon the ocean highway carrying

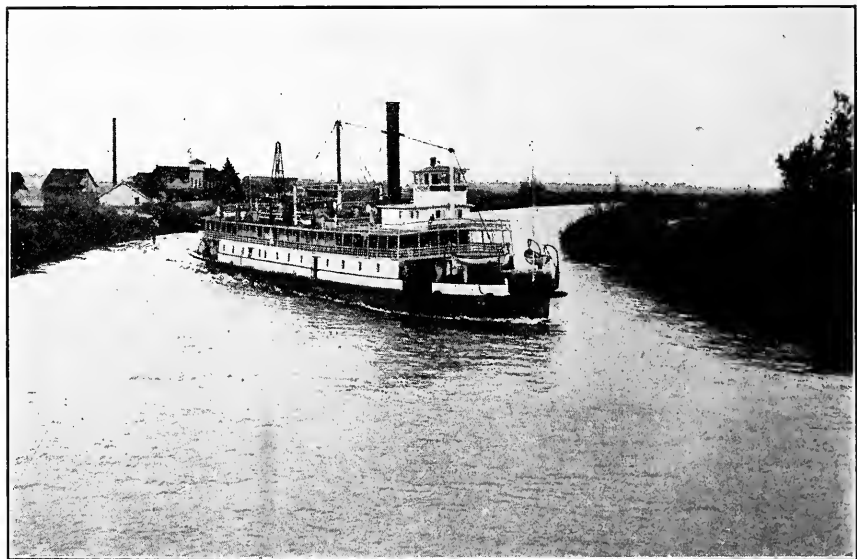
goods from one place to another. If there is a safe landing place nearby a boat may stop with supplies and take away your produce.

A PART OF OUR CALIFORNIA HOME IS WET AND A PART IS DRY.

1. What do we mean when we speak of the different seasons? We usually divide the year into four parts and call them the *seasons*. These are Spring, Summer, Fall and Winter. The spring is the growing season, the time of fresh green leaves and bright flowers. The summer is the time of harvest for the hot sun and dry air checks the growing plants and ripens their seeds. Fall is the time of fruit gathering and of falling leaves. Winter is the resting time for the air is sharp and frosty.

In California we usually think of two seasons because of the way in which the rains come. One of these has little rain and we call it the *dry season*. During the other most of the rain falls and we call it the *wet season*.

2. What time of the year do we look for rain? As the summer passes and the cool short days come we begin to look for rain and by and by it comes. Of course it does not rain all of



The Sacramento River steamer stops at the front door of hundreds of farms and takes their fruit and melons to the San Francisco market.

the time in winter, for there are often weeks of beautiful weather. As the sun begins to climb higher in the sky, the days grow longer, and the leaves and flowers come out, we say that spring has come. Then the rains commence to slacken, there are more clear days. Almost before we know it summer has come again. Winter is, then, the rainy season and summer the dry season.

But how different the winters and summers are in different parts of our California home. Upon the coast the winters are mild and the summers cool because of the cool winds and fog off the water. In the high mountains the winters are very cold and the deep snow covers the ground for six months. In the interior valleys, far from the ocean, the sun shines hot through the long dry summer, and even the winters are warm enough for oranges to blossom.

3. **How does the farmer get along since there is no summer rain?** Is it not too bad that most of the rain falls in the winter when it is cold and the plants need it least, and that none falls during the hot summer? Many of the crops that the farmer sows make a very quick growth in the spring and are ready to harvest soon after the rains cease. But there are many other things such as fruits and vegetables that must have water through the summer to do well. The farmer must do one of two things—either he must obtain water for irrigating his fields or he must practice *dry farming*. Perhaps you have learned from your garden work how your plants can get along with very little water. If you keep the surface of the soil loose the rain that fell during the winter escapes so slowly into the air that the soil will remain moist all summer. If you allow the ground to bake and become hard on the top the water particles will fly away and the ground will quickly dry out. Because of this fact farmers who cultivate their lands carefully can make a living in those parts of our California home where the rainfall is light.

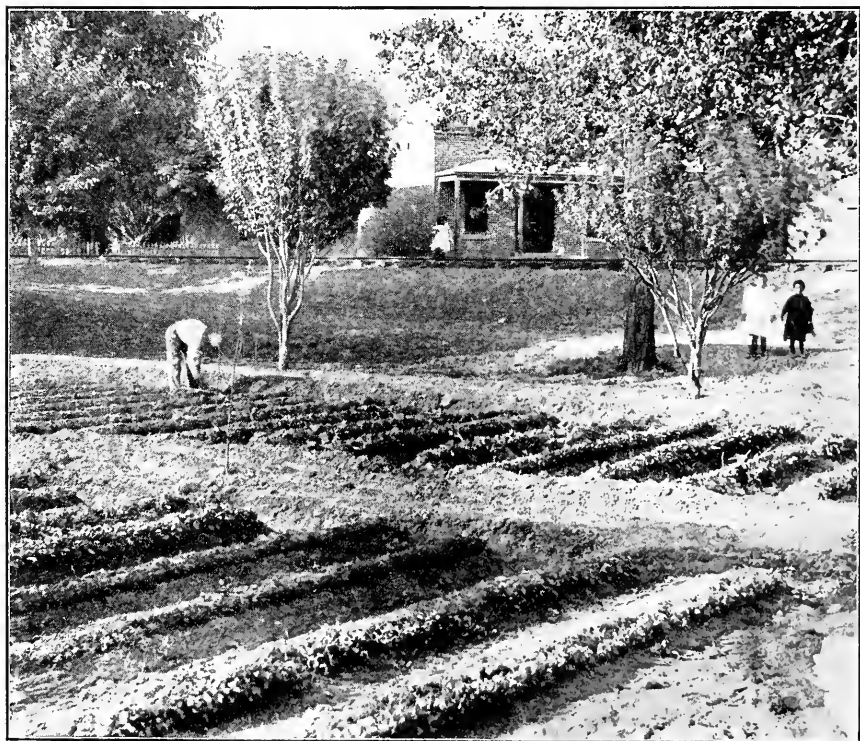
4. **What are the signs of coming rain?** You go out of doors, look up at the sky and note the direction in which the wind is blowing and you say that it is going to rain. How can you tell? Is it not because you have watched the sky through so many seasons that you are quite certain what the weather signs say?

We have all seen the thin haze that creeps up over the

sky from the west. This haze slowly turns to thick clouds which hide the sun. A soft pleasant wind begins to blow from the south. This gradually becomes harder and brings with it the driving rain.

If you awake some morning planning to go on a picnic and the sky is red and lowering you had better stay at home for it is likely to rain. If at night the sun goes down clear with bright colored clouds the morrow will probably be pleasant. A halo around the sun or moon often means that a storm is coming.

The men of the Weather Bureau who predict the weather a day or two ahead do not depend upon the sky and wind but upon a little instrument called a barometer. The storms that travel through the sky have their regular paths and the



If one would raise a summer garden in California he must have water to keep the earth moist. This gardener has made furrows between the rows of plants so that he can thoroughly wet the ground.

Weather Bureau telegraphs ahead when it learns that a storm is coming so that we may get ready for it.

5. From what direction do the storms come? You say that the south wind brings rain and yet that the clouds come up over the sky from the west. How can this be? You have all seen the little dust whirls that sometimes move across the fields. A storm is like a dust whirl only that it is many times larger. It reaches over hundreds of miles of country. The air in this great whirling storm moves in a direction opposite to that of the hands of a clock. As the storm reaches your home the air begins to blow from a southerly direction and as the storm leaves it blows from the opposite direction. Watch the next storm and see if this is not true.

The air in the great storm whirl is sucked upward just as you see it in the dust whirl. When it has reached a great height it has become so cold that the water particles which it carries are turned to raindrops. Thus it is that the storms come from the west while the south winds bring rain and the north winds fair weather.

6. Why is it that the ocean fog does not bring rain? Did you ever wonder why it does not rain when the dark heavy fog



The ocean fog drifting in forms a blanket over the hills and valleys. The higher hills rise into the bright sunshine above it.

rolls in from the ocean? The air is sometimes so full of water particles that they are collected upon the leaves of the trees and fall to the ground as drops. All summer the fog hangs along the ocean shore and yet it does not rain. This is because the water particles forming the fog are merely carried along by the wind that blows from the sea over the land instead of being whirled high in the air, as they are during the winter storms. It is only in the high cold air that the water particles are turned into raindrops.

If when the sea fog covers everything where you live you climb a hill or mountain you will finally come out above the fog in the bright warm sunshine. The fog is like a blanket covering the lowlands but is not thick enough to bury the hill and mountain tops which rise above it as islands do above the sea.

Have you ever shivered in the *valley* or *tule* fog which often fills the valleys in the winter? This fog is sometimes so thick you can see only a short distance and so cold that it quickly chills you through. If you would like to know how this fog is formed go out to a pond, or lake or large stream on a cold morning and you will likely see a fog-like mist rising from the surface of the water. The invisible moisture rising from the ground turns to fog in the same way during the cold clear winter nights.

RAIN DOES HARM AS WELL AS GOOD.

1. **Heavy rains gully the hillsides and injure the roads:** Rain does not always stop when the earth has had enough. If the drops come slowly most of the water sinks into the ground. After a time, however, the ground will hold no more and the water that continues to fall must run away. It collects in streams upon the hillsides and begins to cut little gullies where the soil is soft and unprotected by trees or grasses. The larger streams sometimes wash roadways so badly as to make them impassable.

The long-continued rains make the mud so deep we can hardly get about. In spring they rot the seeds the farmer has just planted so that he has to do the work over again. In summer they spoil hay, grain and fruit.

2. **Heavy rains cause the streams to overflow:** What becomes of the little torrents that run down the hillsides? Some of the water gathers in hollows and forms ponds but most of it finally

joins a creek or river. What a wild foaming stream the river is after a heavy rain! The water rises until it threatens to overflow the fields. If your home is in the valley your father may have to work hard to save the crops by building an embankment to keep the water in the channel.

Before there were any homes in the valley the waters did no harm if they flooded the lowlands. In truth the floods did the valley good for whenever they spread over it they left a thin layer of fine mud or silt. This mud is the cream of the soil upon the hillsides and because of it the valley is now rich and productive.

People who settled in the valley gave no thought to the danger of floods for they did not come every year. Finally when all the valley land had been occupied by homes, so that it became crowded, homes were made in the hills which bordered it. The trees were cleared away and the slopes plowed. After this when the heavy rains came the water flowed down the slopes faster than it did before and the floods became worse. The trees which once grew along the river helped to hold the banks from washing, but the farmers cut these down.



The river has overflowed its banks and flooded someone's home. How desolate it will be when the water goes down and the farmer and his family return.

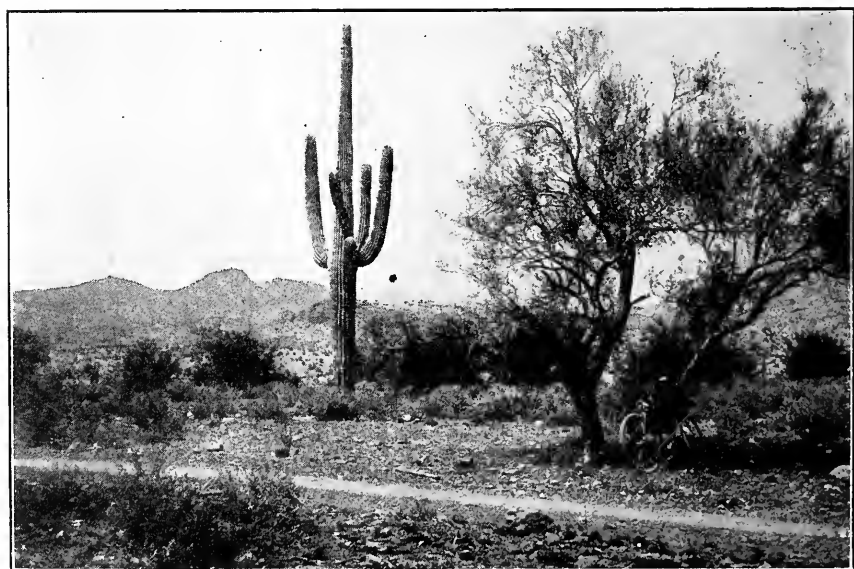
Your home and fields in the valley may be in danger of being washed away because of the thoughtlessness partly of your father and partly his neighbors who live in the hills.

3. **Sometimes the usual rains do not come:** Your father, if he is a farmer, plows the fields and puts in the crops expecting that the winter and spring rains will come as usual. If they do not come the seed put in the ground will fail to sprout. If there comes only a little rain the seed will sprout and grow for a time but soon the young shoots will wither and die.

How can your father be sure of getting returns for his hard work? Will he not have to join with his neighbors and build an irrigating canal from the nearest river and many branch ditches to the different fields? Perhaps they will have to put a dam in the river and make a great reservoir so as to be sure of water for summer use. All this will cost a great deal, but will it not pay?

A LAND WHERE LITTLE RAIN FALLS IS A DESERT.

1. **Strange animals and plants live in the desert:** Do not think that a desert is a place of bare rocks and sand without



On the right of this desert picture is a palo verde tree which grows tiny leaves in order to get along with little water. In the center is a giant cactus with spines in place of leaves.

living things. A desert is a place of little or no rain but it may have the very best of soil. Some deserts in far away parts of the world have no rain at all and nothing lives in them, but our California deserts have some rain and are inhabited by many curious plants and animals.

Desert plants are unlike those growing about our homes. They all have very small leaves while many are thorny and possess a sticky sap. They have had to change their ways of living in order that they might stand the dry climate.

There are many animals in the desert but they too are unlike those with which we are familiar. The animals about our homes are used to plenty of water and they could not live with the scanty supply of the desert. There are rattlesnakes, horned toads, and lizards of many colors. A wonderful tortoise lives in the desert. It has water sacks under its shell which enable it to go a long time without a new supply.

2. How is it that a few people make their homes in the desert?

People who go into the desert are like the tortoise in that they have to carry their water with them. But those who make homes there need a surer supply. All our California desert valleys are surrounded by mountains. On these mountains enough rain falls to make a few springs and little creeks. From these springs iron pipes carry water out into the deserts where the people who are mining have to make their homes.

Water can be obtained in some deserts by boring deep wells. Since the soil of the desert is usually rich people can then make their homes there and surround themselves with green fields and gardens. Find out what you can about a great desert in California that has been turned into one of the richest gardens in the world by water brought in a canal from a large river.

THE SUN IS AS NECESSARY AS IS WATER.

1. The sun gives light: Nearly all living things need the sunlight. Plants that grow in the dark have little color. Miners who spend most of their time underground are pale.

Each morning the light of the rising sun awakens the earth. The flowers open their petals. The birds begin their songs. The animals seek their food. At night everything rests and sleeps except a few birds and animals that hunt their prey in the dark.

2. **The sun warms us:** How we enjoy the sunshine after a cold night. The rays of the sun warm everything they strike. As the sun rises in the sky the air becomes so heated that we are glad to find a shady place.

Living things need heat as well as light. As the spring comes on the increasing heat of the sun starts everything into life. We can almost see the buds unfold during the warm hours of sunlight.

If the sky is clear at night the air cools so quickly that there may be a frost before morning. The tender plants almost stop growing and may be injured. When clouds cover the sky during the day the air does not become so warm for they shut off a part of the heat of the sun. But at night the clouds act like a blanket to keep the earth warm until the sun comes up again.

3. **Sun and water go hand in hand:** The sun alone cannot sprout the seeds in the ground. The sun alone cannot make the farmer's crops grow. Do we not have a desert where the hot sun shines and there is little rain? Some plants and animals can get along, as we have learned, with very little wa-



This is a picture of that desolate region known as Death Valley. There is not a living thing to be seen except a few small bushes. The white strip in the bottom of the valley is salt and soda.

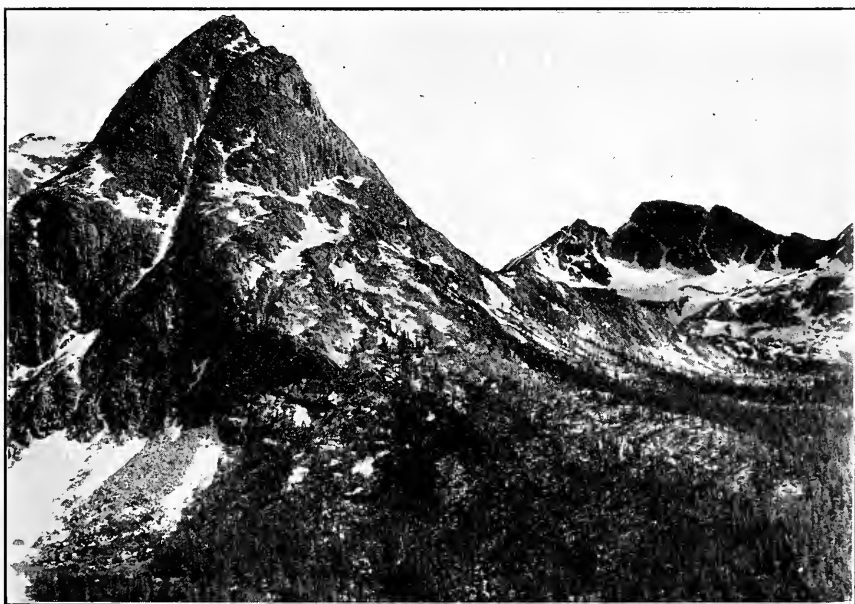
ter. But all must have some water in addition to warmth and sunlight.

Let us go to the top of a high mountain where it is very cold and see what we find living there. Here the sun shines brightly and there is plenty of water, but we see little else than bare rocks. If we hunt about we shall find some little meadows with very short grass and a few little stunted trees about the size of bushes. We may see some chipmunks during the warm days but most of the year they are hidden away in their warm nests. We may also see some birds, but they only come here to spend the summer. During eight months of the year it is winter on this mountain, but although there is water and sunshine it is so cold that few things can live here.

If your home is on a farm, or if you only have a little garden you can tell us now what water, sunshine and warmth do to your plants.

HOW WE DEPEND UPON THE SOIL.

1. What do we mean by soil? The ground upon which we



In the valley at the foot of this mountain there is a forest, but as we go up the slope the trees thin out and finally disappear so that its top is barren of every living thing. In the shadows of the cliffs snow-banks still lie though it is mid-summer. These help keep alive the summer streams.

walk is soil. It spreads like a carpet over all the earth except where the rocks stand up through it. Soil in which our plants grow best is dark and loose. It crumbles in our fingers. If we dig below the dark layer on the top the soil becomes harder and harder until we reach the solid rock.

2. Soil is made from rock: Go out and study some cliff or creek bank and you will learn something about how the soil is made. At the top there is a layer of dark rich earth or *soil*. Below this is a lighter colored layer in which you may find some pieces of rock. Lower down there is crumbling rock. At the bottom will be solid rock, so hard that you can scarcely break it with a hammer.

Once there was no soil on the earth. It was all solid rock like that which you saw at the bottom of the bank. The rain fell on the rocky surface. The warm sun shone on it during the day. Soon little cracks began to appear and into these some of the rainwater crept. The cracks grew larger and the surface of the rock began to crumble. At last plants took root in the crevices and reached down for food and drink.

Tiny organisms of many different kinds made their homes in the crumbling rock and aided in preparing food for more plants. The most important of these organisms we call *bacteria*. Then came the angle worms and larger animals such as the gophers, moles, and ground squirrels. They burrowed in the earth and turned it over and over, until it was made into true soil. As the soil became richer more plants sprang up and when they died their leaves and stems crumbled and gave it the dark color of which we have spoken.

3. Of what use is the soil? The soil is just as necessary as water, warmth and sunshine. It does not matter where you live, in the country, in the city, or upon the ocean, most of the food that you eat comes from the soil. Perhaps you think you could live upon meat if there were no soil to grow vegetables, grains and fruits. But you must not forget that the animals that furnish your meat would die without the grasses and other plants which get their food from the soil. Your living depends just as much upon the soil as does that of the farmer. If he raises good crops it enables you to live more comfortably wherever your home or whatever your work may be.

4. Valley soils are usually the deepest and richest of all: If you have traveled at all in the country you must have noticed

that the homes of the valley farmers are usually closer together and appear more prosperous than those of the farmers in the mountains. What is the reason for this? If all the land were nearly level as it is in the valleys or upon the plains the soil would likely be deep and rich almost everywhere. But much of our state, as we all know, is formed of hills and mountains, the slopes of which are often very steep. We have already learned something of how soil is made from crumbling rocks and how during every heavy storm the raindrops gather in little torrents which rush down the slopes to the valleys. Each muddy torrent is loaded with particles of the soil from the highland which it carries along until reaching the gentler slopes of the lowlands it drops a part of its load while a part is carried on to the ocean.

On the steep slopes the soil washes away most easily and here we find it is poorest. On the gentler slopes it washes less and is deeper. The valley soil is the deepest of all for none washes away and new soil is constantly being added through the work of the water.

The farmer's wealth lies in his soil. In the valleys it is so productive that he does not need a large piece of land in order to make a good living. Thus homes can be near together, which adds to the advantages which they can enjoy.

The farmer who lives in the hills or mountains must have more land than the valley farmer, for much of the surface is too steep or rocky to cultivate. The hill farmer must also care for his soil or it will wash away, making him poorer and the valley farmer richer.

The homes in the mountains must be far apart while the difficulty of reaching market is often great. But in spite of the poorer soil a mountain home is often pleasanter than one in the valley below.

THE WAY IN WHICH THE LAND SLOPES DETERMINES THE SORT OF WORK DONE IN DIFFERENT PLACES.

We have learned about water, warmth, sunlight and soil and how they affect our work. We must not forget that the way in which the land lies has also much to do with the kind of work done. The farmer prefers the valleys or the gently sloping hills. The stockman takes his herds to the rough hills and the dry slopes because it is impossible for the farmer to use such lands. The miner works in the mountains because

there the veins of ore are easier to get at. Every place on the earth has its own work to which it is best suited. Every bit of the earth's surface is useful to us in one way or another.

WHAT CAN WE LEARN FROM A DAY UPON THE SEA SHORE?

1. We will choose a windy day for our walk so that we can see what the waves are doing. Where the headlands extend out into the ocean there are bold rocky cliffs. Where the lowlands come down to the water between the headlands there are long stretches of smooth sandy beach.

With what a thundering noise the great breakers throw themselves against the cliffs. It seems as though the solid rock must be torn away. And indeed it is, for here and there at the foot of the cliffs we can see huge pieces that look as though they had only just fallen. All about these pieces are smooth boulders which were broken from the cliff long ago and have been thrown about by the waves for so long that they have been made almost as round as cannon balls. If you will listen



What a delightful time the children are having upon the beach at low tide when many curious little sea animals and plants are to be found.

you can hear the rumble of the boulders and smaller pebbles as they roll over each other with each retreating wave.

2. In other places the waves are making sand beaches: The shores curve in toward the land where the valleys come down to the water. In some places the ocean extends so far into the land as to make bays where ships can anchor and be safe from storms. The bays are lined with sandy beaches where the water is clear and quiet.

The story of the sand grains is a strange one. If you will examine the tiny grains you will find that they are very hard. They once formed parts of some rock in a cliff against which the waves beat. As the rocks crumbled away beneath the blows of the waves the softer parts were made into mud which the currents carried far out where the water was deep and quiet. There the mud settled to the bottom and formed a soft layer over the ocean floor. The harder parts were ground down until they became sand and were carried by the currents into the bays and then thrown up to form smooth beaches.

3. The winds pick up the sand and build great dunes: Where the winds from the ocean have a free sweep over the dry sand at the top of the beach they pick up the little grains and carry them inland. There they are piled up in huge rounded ridges called dunes. Unless plants get a foothold on the dunes the winds keep them slowly moving. The little grains on the windward side are picked up, carried over the top and dropped when they reach a quiet spot. Thus the dunes move along and sometimes bury trees and houses.

4. The ocean winds are always cool: If your home is far from the ocean how you long during the hot summer days to visit the beach where the winds and waters are always cool. The sun shines on the ocean just as it does on the land but the water warms slowly while the land heats up very quickly. Before the summer sun can do very much toward warming the ocean the winter comes and cools it off again. This is the reason why people who live along our California coast dress almost as warmly in summer as they do in winter.

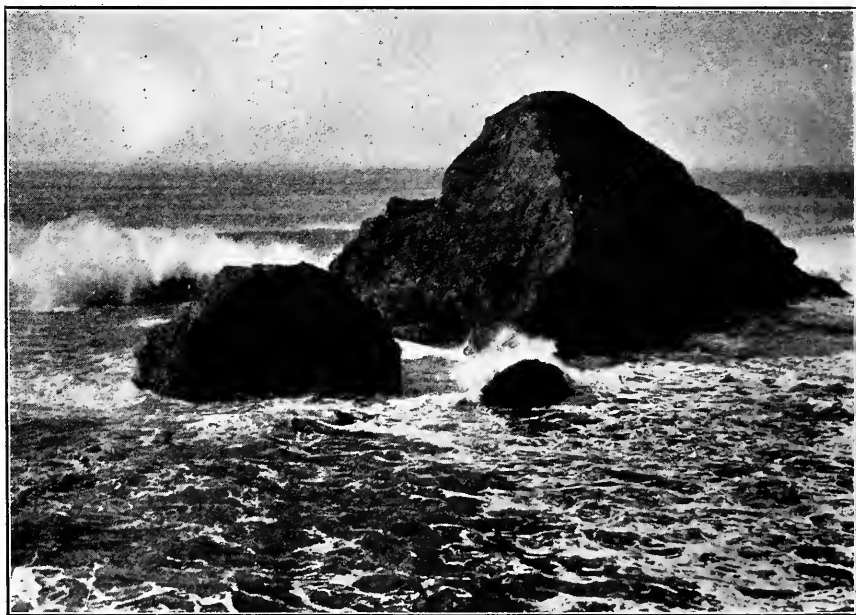
5. The story of the islands that lie off the shore: The little rocky islands close to the shore look as though they had once been a part of the mainland. The waves are really eating away the land. They found the rocks softer in some places than

in others and in those places worked more rapidly so that after a time the hard rocks formed a cape extending out into the water. But the waves kept on and made the cape into a peninsula connected with the mainland by a narrow isthmus. Finally the isthmus was torn away and the island was born.

But these are not the only islands we have. Some of you can see from your homes upon the coast great islands lying far out in the ocean. These appear like bold steep mountains. Once these islands were a part of the mainland upon which you stand and you could have walked out to them without getting your feet wet. But the land sank and the ocean flowed over it leaving these mountains as islands.

6. The water of the ocean is salty: Did you ever try drinking ocean water? If you have you will not wonder that shipwrecked people die of thirst with water all around them. You can find the salt in sea water by boiling down a dish of it. There are many other substances in sea water but they are in such tiny quantities that you cannot find them.

Our California salt is obtained in two ways. One is by



This island was once a part of the mainland but the waves have torn away the softer earth and left this bare hard rock which now forms a safe home for the sea lions and water birds.

the use of large shallow ponds where the water evaporates, leaving the salt in the bottom. The beds of the dried up lakes in our deserts also supply salt. These lakes, like the ocean, had no outlet, and as the streams were continually bringing them salt as they do the ocean their waters finally formed a strong brine. When the region became a desert the lakes dried up and left us the salt spread over their former beds.

7. **The water is always rising and falling:** One of the strangest things about the ocean is that the water is always rising or falling. Twice a day the water is high and twice it is low, but the hours of the high and low tides are always changing. If we watch carefully we shall find that the tides have something to do with the moon. The high tides always follow behind the moon as though it were pulling the water toward it.

High tides help vessels to enter some of our shallow Cali-



This huge sea cave was made by the waves on one of the islands lying off the coast. The tide is out and the boys have entered it in a boat.

fornia harbors. The tides are felt away up the Sacramento and San Joaquin rivers into the heart of our state.

8. The ocean is full of living things: If you walk along the beach you will find curious things thrown up by the waves. There are beautiful shells of many kinds and delicate sea-weeds of brilliant colors. In the hollows of the rocks when the tide is out we find ponds of water filled with wonderful creatures. There are bright colored fish, hermit crabs, molluscs, sea anemones and many others.

Out in the deeper water you can often see large fish, starfish, sea urchins and great abalone shells. Upon the rocky islands you may find some sea lions. Each of the creatures of the water has its own home just as do the creatures of the land. Some kinds of shells are found in the sand, some upon the rocks, some remain out of the water while the tide is out, while others remain in deep water.

WHAT A RIVER AND ITS VALLEY HAVE TO TELL US.

1. Why many people seek homes in the valley: Wherever we go we find the valleys more thickly peopled than the hills. We have already learned that the valleys have the richest soil.



The fishermen are hauling in their nets and have made a good catch. This quiet bay is full of many kinds of fish including the great salmon which is seeking a river in which to lay its eggs.

We must also remember that the gently sloping lands of the valleys are more easily planted and harvested and that nearly

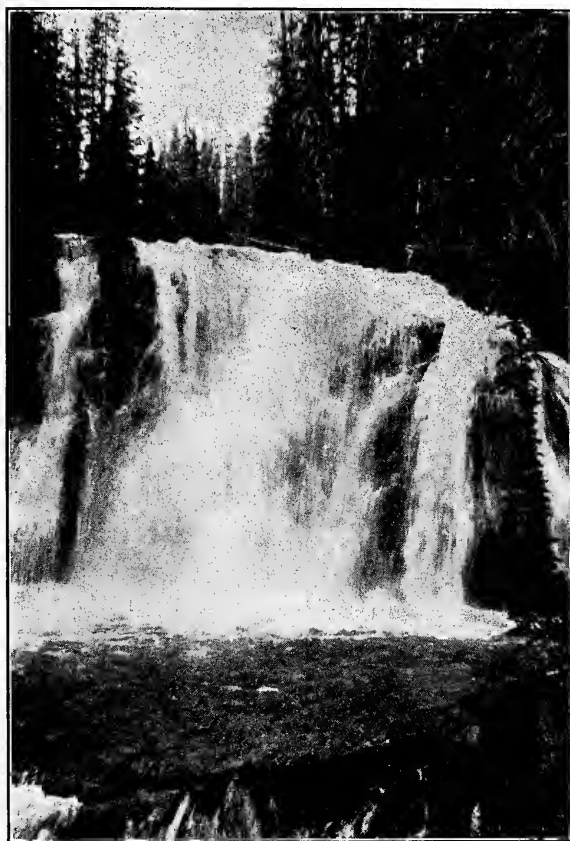
all the land is suitable for crops of some sort. In the mountains we find only little fields scattered here and there that are level enough to be cultivated.

We can get an abundance of water in wells in the valleys; we can also go to the river and take out water in canals for irrigation. In the hills and mountains we usually have to depend upon spring water which is purer than the river water but not so plentiful.

Road building is easy in the valleys. Here also, because there are many people, there are vil-

lages, post-offices, stores and schools. The valleys are like rivers, for we can use them as highways. How much easier it is, if we are traveling through a mountainous country, to be able to follow the valleys. We can travel from one end of California to the other and follow valleys most of the way.

2. The rivers are put to many uses: You will not find many rivers in our state upon which freight boats can be used, but they are worth a great deal to us for all that. Their chief



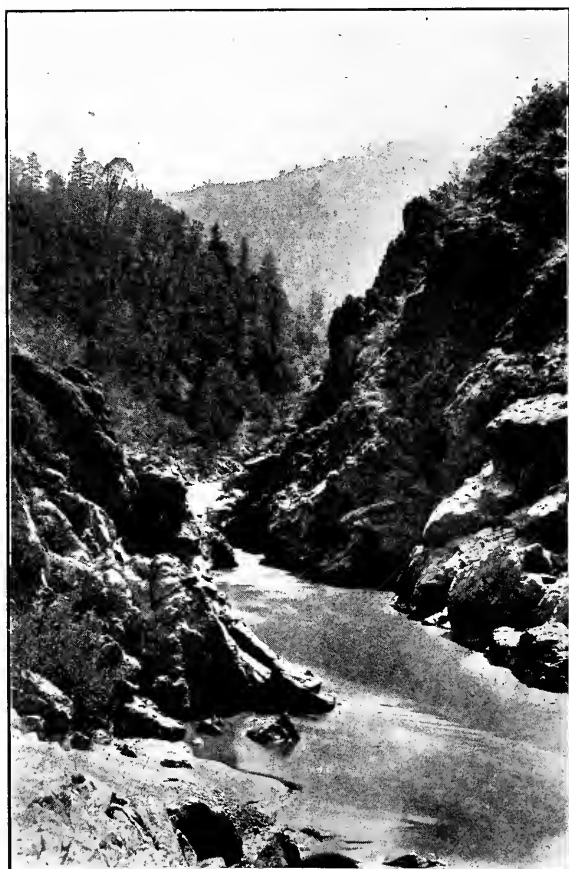
This waterfall has not yet been put to any use.
It is in a forested valley very far
from where people live.

use is to supply water for irrigation. Follow the canals back toward the mountains and you will find that they all get their

water from some river.

In places the rivers plunge over rocks in rapids and waterfalls and here they are put to another use. They may be made to turn water-wheels which cause the mills to go, or to make electricity which affords us light and power for many different purposes. Sometimes the river water is made to do double work by first turning a mill and then being carried off in a ditch to irrigate the land.

The river is the servant of the people who live along its banks, bringing comfort and wealth.



The river has worn a deep rocky channel through the mountains on its way from the snowy peaks to the level valley.

3. How the river behaves in different places: The river does not follow a straight course to the sea but winds here and there. In the hills and mountains its course is crooked because it tries to escape the hard rocks that lie in its way. Where the rocks are hard the water wears them away more slowly. Here the river flows in a narrow channel between steep slopes and tumbles over the rocks in rapids and waterfalls. Where the rocks are soft we shall find that the canyon widens to a valley through which the river flows gently.

When the river reaches the broad valleys toward its mouth it flows very slowly and winds as though it hardly knew which way to turn. Here the banks are low and made of soft earth through which the river as it winds is always picking out new channels.

4. **The river is not always quiet and well behaved:** In summer you will find the water clear and quiet. It is doing no work now. If it were not for the many springs in the mountains away back toward its head the river would almost dry up.

How different the river appears after the winter storms. It is then a muddy torrent. In the swifter places it drags pebbles and sand along the bottom and these wear away the rocks little by little and make the channel deeper. Where the river flows gently it has to drop the pieces of rock. This makes the river shallower and more likely to overflow and flood the country along its banks.

5. **The story the river tells:** As we watch the work of the muddy torrents, during a rain, cutting little gullies in the hillsides, it is easy to see that the river must have made the



The river has reached the valley and flows quietly between wooded banks. Now it is low and sand bars appear but in early spring when the snows are melting on the mountains it flows bank full.

valley through which it flows. Long ago there was no valley. The river began to cut a channel like those of the muddy torrents. After many years it succeeded in making a gorge or canyon through the hills. As the years passed the hills continued to crumble and wash away; where the rocks were softer this work went on faster and valleys finally appeared.

The beautiful valley as we see it today is the work of the river. But we must not think that it is finished. The hills that rise back of the valley are still being washed away with every winter storm. Many thousands of years from now the hills will have almost disappeared and the farmer can then use all the land.

6. The climate of the valley: Most of us prefer the climate of the valley to that of either the sea shore or the mountains. It is almost always cool along the coast. In the mountains the winters are cold and snowy. In the valley the summer days become very warm. In the lower parts of the valley the nights are cold and the frost may sometime destroy your early spring vegetables, or freeze the fruit buds in the orchard. If you place your home upon the side of the valley the frost will seldom do you harm. This is because the cold air settles in the lowest places it can find. Notice sometime when you are out early in the morning how cool the hollows are compared with the higher land about them.

WHAT CAN WE LEARN FROM A JOURNEY THROUGH THE MOUNTAINS?

1. The Mountains are not waste land: We sometimes think of those lands where no people live as waste or worthless. In this we are very much mistaken. We must not look upon the steep and rugged mountains as of no use to us. On the contrary, they serve us in so many ways we could not possibly get along without them.

2. More rain falls on the mountains than in the valleys: We can see from our homes in the valleys that the clouds are heavier and hang longer over the mountains than they do over us. Many a time have we seen a storm over the mountains while the sun is shining brightly in the valley below.

The cold air over the mountains turns the water particles in the air into clouds, while the warm air over the valley causes them to melt away.

The mountains are, then, very necessary to the farmer.

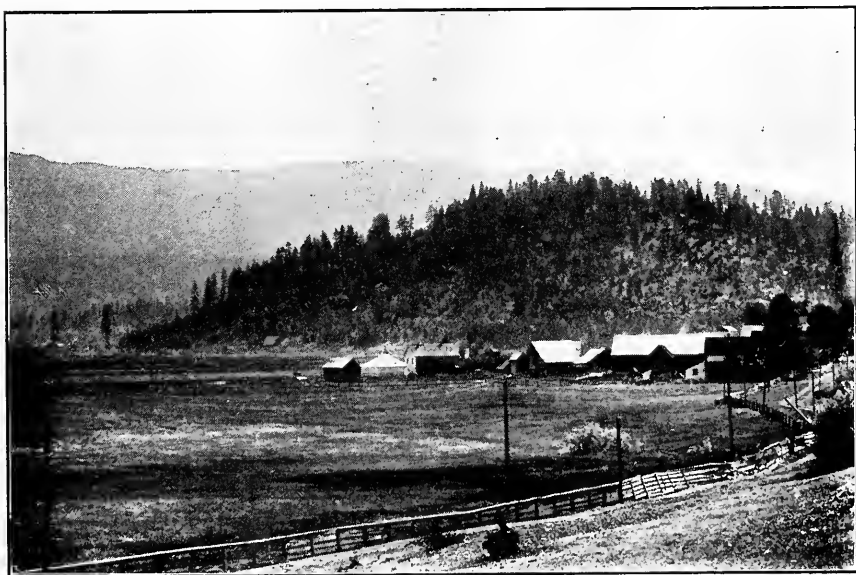
If there were no mountains there would not be enough water in the streams for irrigating the rich valley lands. They would remain almost unsettled because of the lack of water.

3. **The farther we go up the mountains the colder it becomes:** Have you not all seen snow on the mountains after a winter storm? Perhaps oranges are ripening on the trees about your home, but how cold must be those snow-covered mountains.

Let us take a few days of our summer vacation and climb the mountains. The first day after leaving the smooth valley we travel through a beautiful hilly country. There are many orchards and comfortable homes. By night, however, we have reached a different land. The air is cool and we need our coats. In the morning the ground is covered with a white frost.

We go on up the mountain and enter deep forests of giant trees. By and by the trees become smaller, the slopes steeper and more rocky and at last we come out on the top of a mountain peak far above the forests. Here the winters are so cold and the wind so fierce that very few plants can grow.

4. **Mountain products are unlike those of the valleys:** We have now learned why the products of the mountains are dif-

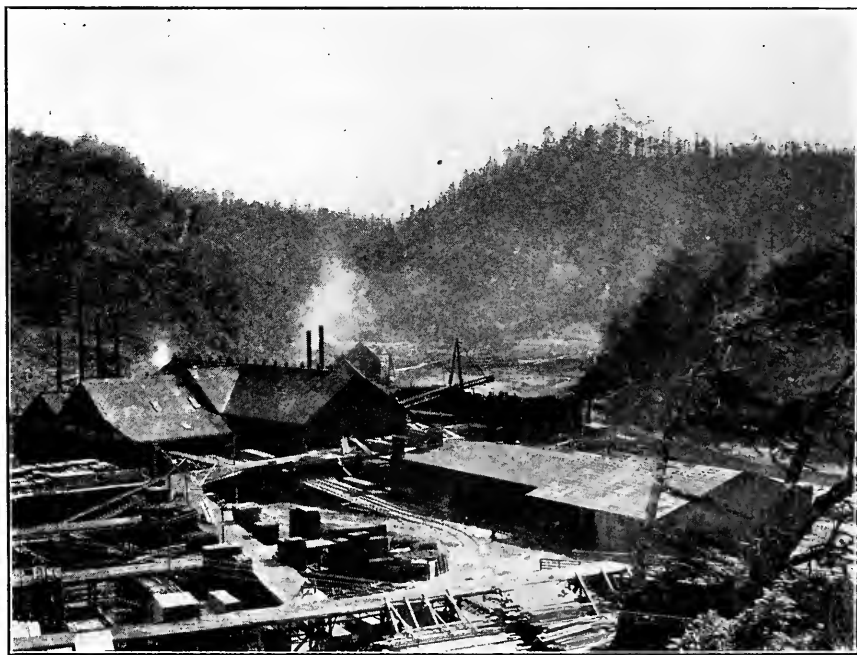


A village in a mountain valley. The people living here cut hay on the meadows, obtain fuel and lumber from the forested slopes and perhaps dig in the earth for gold.

ferent from those of the valleys; each kind of plant does best in the climate to which it is adapted. Therefore we cannot look for the same plants on the cold mountains as in the warm valleys. You could not grow oranges or figs in a mountain valley, but you could grow apples that are much better than those in the valleys.

5. **Mountains furnish fuel and lumber:** Our California valleys are too dry for pine forests. The tops of the very high mountains are too cold. But between the dry valleys and the cold mountain tops there is a broad belt where the climate is just right; and it is upon these middle slopes that we find the finest pine forests in all the world.

There are many sawmills in the mountains. The sawmills are often difficult to reach because of the roughness of the country, and so, instead of building roads and hauling the lumber down, an easier method is used. A flume is built of plank and a stream of water turned into it. The flume winds

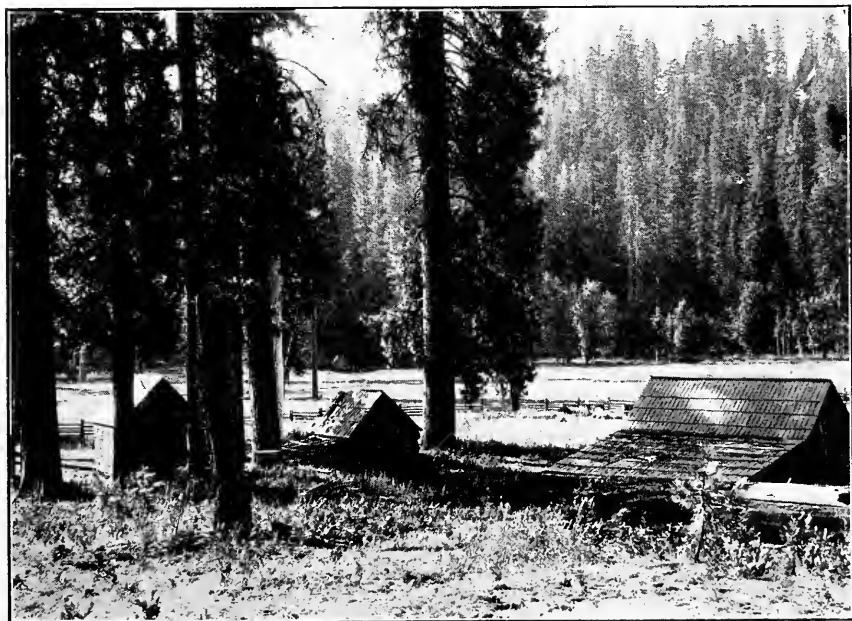


The sawmill is in a narrow valley in the mountains. The slopes are too steep and heavily forested for farming and there is little forage for cattle. Lumbering is the only industry that brings people here.

down the mountains on an easy grade until it reaches the valley. The lumber as fast as sawed is thrown into the flume and in this way with little trouble is delivered to the railroads in the valley below.

6. Mountain streams supply water power: Do you not love to watch a mountain stream dashing over the rocks and down through a canyon? If you have seen one of the beautiful waterfalls in the mountains you have perhaps wondered why men do not put up mills close by and make the water run them. But you must remember what a hard journey it was to reach the waterfall. It would cost a great deal to build roads. Besides this all the materials for use in the mill would have to be hauled up the steep mountain roads, and the manufactured products would have to be hauled away again.

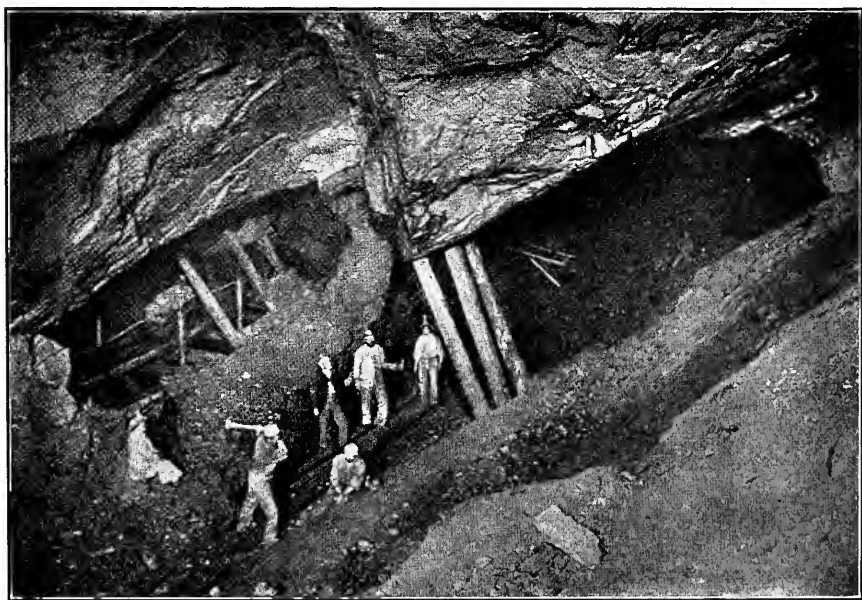
Long ago, if one wished to use a waterfall he had to build his mill close to it, but now there is an easier way. We turn the force of the water into electricity and carry it wherever we want to use it. We can build our mills on some bay more



A summer ranch in a mountain valley. All about the valley are forested slopes. The rancher comes here in the summer with his cattle and pastures them on the green meadow. As winter approaches he takes them down to a warmer valley.

than a hundred miles from the waterfall. Have you not seen the lines of great poles carrying the electric wires? The power of the waterfall is brought to our homes to give us light and to do different kinds of work.

7. **Mountain streams furnish water for irrigating our lands:** The water in the streams that flow by our doors comes from the mountains. If it were not for the mountains the streams would be small and most of them would entirely dry up in summer when the crops need water most. The cold mountain tops not only take the moisture from the clouds but turn much of it into snow which cannot at once run away. Sometimes the snow falls to a depth of ten to twenty feet. Much of this remains until the warm days of summer, and as it slowly melts it aids in keeping alive the many little streams and springs. These supply the water we so much need for our gardens. If a stream does not have sufficient water in summer to supply the people along its banks, then a reservoir is built far back in the mountains near its head. This will hold a part of the water that would run away in the early spring when we do not need it for irrigation.



The miners have excavated this great cavern underground in their search for gold. The huge posts are helping to hold up the roof of the cavern.

8. The mountains form pleasant summer camp grounds:

Summer is so delightful in the mountains that we all long to spend our vacations there. While the heat is so great in the valleys that we can hardly bear it, the mountains are cool and pleasant. There are green meadows in the mountains dotted with flowers. There is an abundance of pure cold water. There are shady forests, great cliffs and waterfalls. A few weeks out of doors in the mountains make us strong and fit for hard work when we go home.

9. A few people make their homes in the mountains:

Because of the steep slopes only a little of the land can be cultivated. If we go very high in the mountains we find it too cold to grow anything. The mountain farmer requires more land in order to make a living than does the valley farmer. He plows and plants a part of his land, but most of it he uses for pasture.

The miner also lives in the mountains. He does not care how rough the slopes are or how cold the weather is if he can only find the veins of gold.

The lumberman also lives in the mountains because here are found the forest trees suitable for lumber. Occasionally we run across a little village in the mountains to which the people, scattered over many miles of country, come for their supplies and mail.

WHY IS THE COUNTRY THE BEST PLACE FOR A HOME?

We think our country home is more attractive than your city home. In the country we have room to run and play and make as much noise as we wish. Here there is plenty of sunshine and fresh air. All about us are orchards and gardens that supply us with fresh fruit and vegetables. In the pasture are the cows that give the milk we enjoy so much. The creeks and woods contain all kinds of interesting things. We have almost all the advantages of people that live in a city and many things that they do not have.

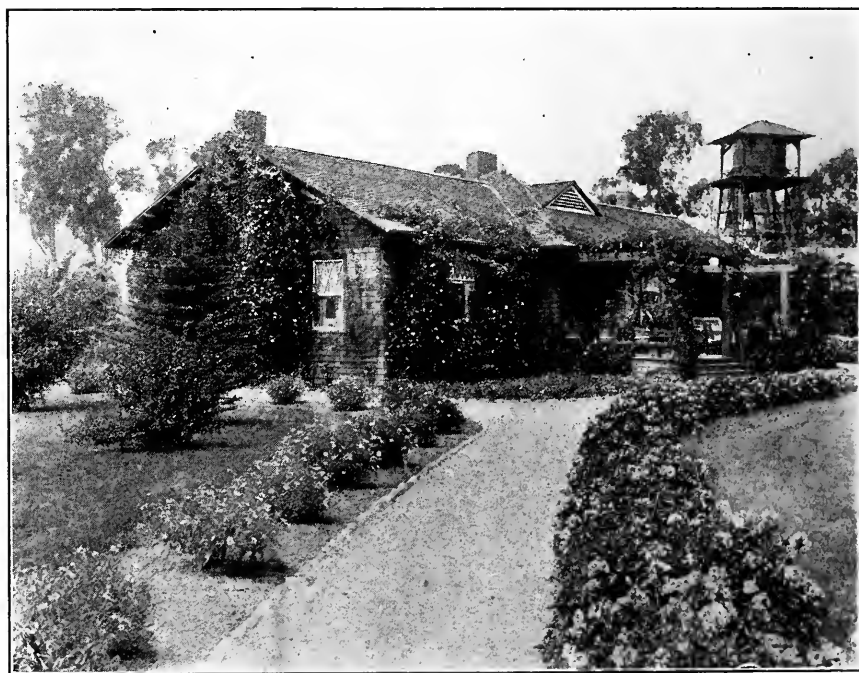
ONCE COUNTRY HOMES HAD FEW COMFORTS.

The country homes of our grandfathers had few comforts. The roads were poor and during the winter season they were almost impassable. It was difficult to sell produce for money and usually the farmer had to take "store goods" in exchange. There was no rural mail delivery. There were no

electric lights, and before the discovery of petroleum most people used only candles. It was a long distance to school, and most boys had so much work to do they could not attend regularly.

ONCE PEOPLE IN COUNTRY HOMES DEPENDED UPON THEMSELVES FOR THE MOST OF THEIR NEEDS.

Long ago there were no great factories. People depended almost wholly on themselves for their needs. They raised nearly all their food. They made their own clothing, shoes and many of their utensils. The chief things that they had to buy were tea, coffee, salt, sugar and molasses. The farmer usually raised his corn and sometimes his wheat and had them ground in some little mill not far away that was run by water power. He kept a few sheep for their wool, which was spun into thread on the spinning wheel and then woven on a hand loom. Many of the tools used on the farm were home made. Wild game supplied most of the meat. The little cabin in



The country must surely be a pleasant place in which to live if it affords such attractive homes as this one. If your home is not as pretty as this one you can make it so.

which the family lived was made of logs. The floors, tables and doors were made of split plank.

NOW COUNTRY HOMES HAVE ALL THE COMFORTS OF CITY HOMES.

Now farmers have all the good things that city people have and some that city people do not have. The farmer has his automobile which takes him to town over smooth hard roads. His home has electric lights, hot and cold water and other conveniences. In many parts of the country there is a daily mail. The country schools are as good as the city schools. Country homes have woods and open fields about them and plenty of sunlight instead of being shut in by the homes of other people.

COUNTRY PEOPLE STILL DEPEND MUCH UPON THEMSELVES.

The farmer now receives more money for his crops than his grandfather did, and so he has more to spend. Although



These are some poor women of Cairo in Egypt. They can afford nothing better than this donkey cart for an afternoon ride. One of the women is a Mohammedan as we can tell by the veil over her face.

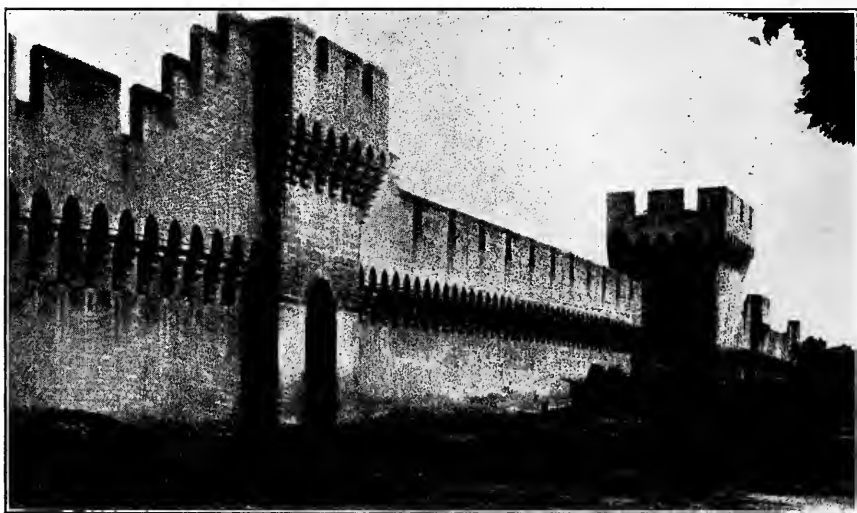
he raises almost everything that his family really needs, he buys his clothing, shoes and nearly all the articles about the house and upon the farm because he can get better ones than he can make himself.

The farmer has his own vegetables, milk, butter, eggs, fruit and meat. These are perfectly fresh and better than they would be if he had to buy them. The farmer can now afford to buy luxuries and the railways and steamships bring them to him from all parts of the earth.

WHY DO PEOPLE LIVE IN CITIES WHEN THE COUNTRY OFFERS SUCH PLEASANT HOMES?

1. Long ago people were safer in the cities: Many long years ago it was not as safe to make one's home in the country because of wars and robbers. People lived in villages or cities which were surrounded by strong walls. They went out into the country to work in the morning and returned to their homes in the village at night. In some of the distant parts of the world people still live in this way, but most city walls are no longer any protection and they are being torn down.

2. A city is the best place to engage in buying or selling: A good place to buy and sell is where business calls many people together. Perhaps a town will some day grow up about



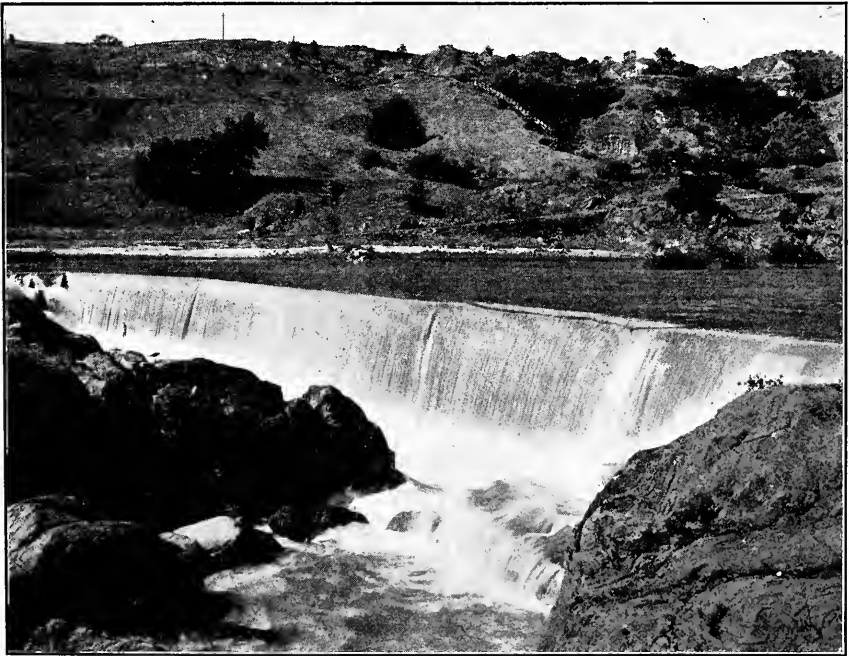
This is the wall which the inhabitants of an ancient city in France built for their protection long ago. The narrow gate leads into the city. From the towers the people once beat back the enemy.

the little country store near your home because it is easily reached by all the people living in that region. The city in which you may live was once a village. People came to the village to trade. And because of the increasing business other people put up stores and mills. In this way the village kept growing, for each new kind of work carried on drew more people.

3. The life and bustle of a city attract many people: There are many who do not love the quiet life of the country. They prefer to live where there is noise and excitement all day and much of the night. They do not seem to miss the fresh air and sunshine of the country. They do not care for the free life out of doors.

LIFE IN A CITY HAS DISADVANTAGES.

Life in the city is not as healthful as life in the country. The late hours, the noise, the bustle and excitement wear people out. People who live in a large city often lack the



A dam has been built across the river where it comes out of the mountains. From the reservoir thus made the water is carried away in a canal for the use of nearby cities and for irrigating farm lands.

needed sunshine. They do not take the exercise they ought in the fresh air and always ride because the street cars are so handy. City people become much like machines and depend upon others for all the things they need. The fruit and vegetables to be had in a city are not as fresh and well flavored as those which come directly out of your garden.

CITY PEOPLE DEPEND UPON OTHERS FOR EVERYTHING THAT THEY HAVE.

If you live in a city your father is probably busy at one kind of work. He does not have the time, nor, could he if he had the time, supply the family with water, food, fuel and the many other things needed. Every bit of food that you eat is produced by some one else. Water is brought to your home



In the cities of the East water is not piped to each house but comes to fountains placed here and there in the streets. In this picture the women of Nazareth, Palestine, have gone to the fountain for water. They carry it home in jars upon their heads.

in pipes by the water company. The grocer brings the things you need to eat. The milkman brings your milk. The fruit peddler brings fruit and vegetables. The baker stops with a loaf of bread every day. The utensils your mother uses in the home are all boughten. You go to different stores for your clothing, shoes and hats. If you had to go out into the country to live I am afraid you would be quite helpless until you had learned to do things for yourself.

CITY PEOPLE CANNOT TAKE CARE OF THEMSELVES AS WELL AS COUNTRY PEOPLE.

People who learn to do many kinds of work become self-reliant. Woodsmen, miners and farmers who live far from places where they can buy their necessities learn to do a surprising number of things. They build their own homes; they raise a large part of their food and learn to cook it, and sometimes make their own clothes. They learn to wait upon themselves and thus can be comfortable wherever they go.

THE FEEDING OF THE PEOPLE OF A CITY IS AN IMPORTANT BUSINESS.

There is little room in a great city for growing fruits and vegetables or any of the other foods that are needed. All these have to be brought in from the country outside the city. The business of supplying many thousands of people with something to eat is a very important one. For miles all about a city we find almost every one engaged in raising supplies of every kind of produce that the country affords. Almost as many more are engaged in selling and delivering these supplies to the different homes throughout the city.

If you will watch the trucks, trains or boats that reach the city early in the morning, you will find them loaded with produce from the country. The most of this goes to the wholesale markets. Here come the peddlers and shop-keepers to buy their day's supplies.

Such articles as sugar, flour, tea and coffee are stored in large quantities in warehouses, for they have to be brought a long distance and can be kept without spoiling. The country produce must, however, be brought in every day. If the supply were cut off for a single day people would begin to suffer.

WHERE DO CITY PEOPLE GET THEIR WATER AND FUEL?

Water and fuel are as important as food. City people cannot get their water from wells or springs as people in country homes usually do. Water has to be brought to the city in aqueducts or pipes. If the city is very large these must carry a river of water. It must be pure enough to drink and there must be enough of it for all the many different needs of the city.

The water for a city is usually obtained from some distant mountain stream. If this is not large enough, a reservoir is built so that a great quantity may be kept stored for the dry season. Care is taken that the slopes of the hills about the reservoir are kept clean so that the water will be suitable to drink.

When the water reaches the city it is turned into branch pipes. From these, smaller pipes lead to each of your homes. The water in the pipes must have pressure enough to carry it to the tops of the tallest buildings.

City people cannot go out into the forests and cut trees for fuel. They must go to the market and buy their wood or coal. If gas is to be used there must be pipes connecting the homes with some place where gas is manufactured or with some one of the oil fields where there is an abundance of natural gas.

IN WHAT SORT OF HOMES DO CITY PEOPLE LIVE?

Have you ever been in the heart of a large city and seen the huge buildings ten to twenty stories high? The land is so valuable that the buildings are made very tall in order that they may hold many people. We could hardly expect to find gardens and lawns where the land is so valuable. In the outskirts of the city land is not so valuable and the houses are one to two stories high and are usually surrounded by trees and gardens.

In the heart of the city there are many hotels and apartment houses in addition to office buildings and stores. In the apartment houses each family may live upon one floor. Elevators carry people from one floor to another. How would you like to have a home of this kind?

The tall city buildings are usually built of stone, brick or cement. Many great city blocks are now built of re-inforced concrete or cement. By this we mean that they have steel

frames or skeletons under the cement. These frames make the buildings strong enough to withstand earthquakes.

Wood is not a suitable material for large city buildings. This is partly because wood is not strong enough and partly because wood easily takes fire. Many city buildings contain so little wood that they cannot burn up.

EVERY CITY WAS ONCE A LITTLE VILLAGE.

1. A village on a great Bay became the largest city in California: San Francisco was once only a village with a few little houses. Then there were not many people in California. There was no business to make a city.

When gold was discovered in California people came here from all parts of the world. They found the village of San Francisco the most convenient place to stop and get their tools and other supplies for mining. San Francisco is on the shore of a bay where the largest ships can come and load and unload their cargoes. San Francisco bay is at the mouth of a great river by means of which the miners were able to go



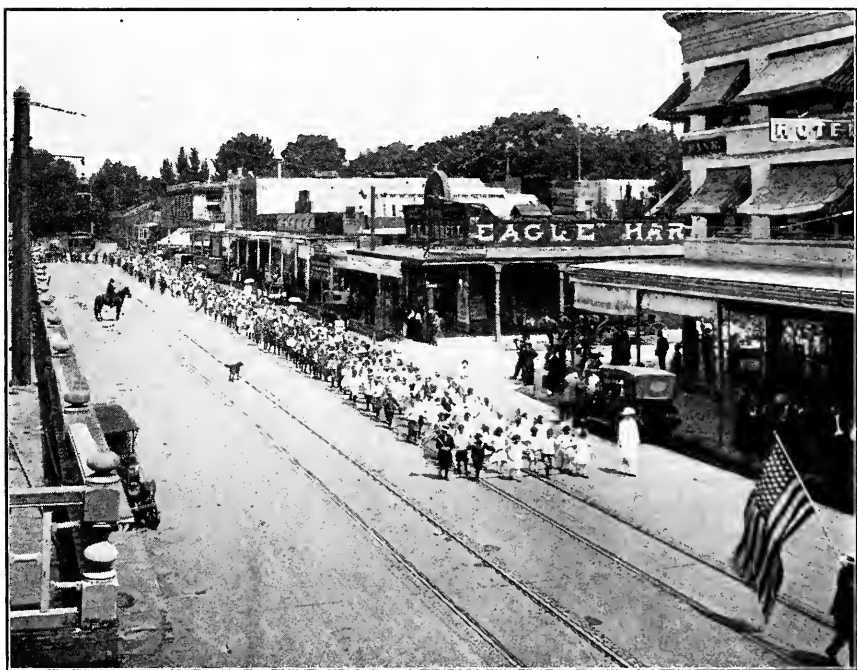
Parks with trees, fountains and shady walks give some of the advantages of country life to people who have to live in cities,

far inland, even to the foot of the mountains where they were to hunt for gold.

San Francisco was, then, a good place for carrying on foreign commerce. It was a good place for business of buying and selling. It was a good place from which to start for the mines. These things made the little village of San Francisco a great city in less than a year.

2. Another great city of our state sprang up in a rich valley where many roads met: What do you suppose made a little village in Southern California become the great city of Los Angeles? The little village was very well situated. A stream of never-failing water flowed by it. All about were miles of fertile land which needed this water, for the climate is dry.

The village had the farther advantage of lying at the meeting point of trails and roads leading to other valleys and to distant parts of California. Every one who traveled through Southern California had to go through or near the village of Los Angeles. This made the village a good center for trade.



Every city sprang from a village. Such a village did not stop growing when it had supplied the needs of the people living around it but reached out by railroad and river to trade with those far away.

Finally when the country settled up and the railroads were built into Southern California they also came to Los Angeles because this was a good stopping place. And in this way it came about that because the place was central, because there were fertile lands on every side and because it had a pleasant and healthful climate the village of Los Angeles became the great metropolis of Southern California.

3. The village of Fresno became a city because it lay in the centre of a fertile and well watered farming district: Who has not heard of Fresno raisins? If you could visit the valley where they are grown you would see miles of vineyards. You would also see orchards, fields of alfalfa and herds of dairy cattle. A great stream called the Kings River flows through this valley and supplies water for all the land. There are thousands of homes in this fertile region. The people who live here must have some place where they can buy their supplies and from which they can ship the raisins and other produce. Thus it is that we find in the middle of the valley the prosperous city of Fresno.

4. Situated upon a river at the end of the long trail from the East was once a village which is now the capital of California: Long ago Captain Sutter built a fort where Sacramento now stands. Here came the Gold Hunters and rested after their journey across the mountains and deserts. Here also the river boats brought the Gold Hunters who had reached San Francisco by sea. The village that sprang up here was well situated for trade. After a time the railroads came and they also made Sacramento a stopping point. Then orchards were set out upon the fertile lands lying all about. The fruit was collected at this central point and shipped to distant markets far across the mountains. Thus Sacramento became an important city and capital of California.

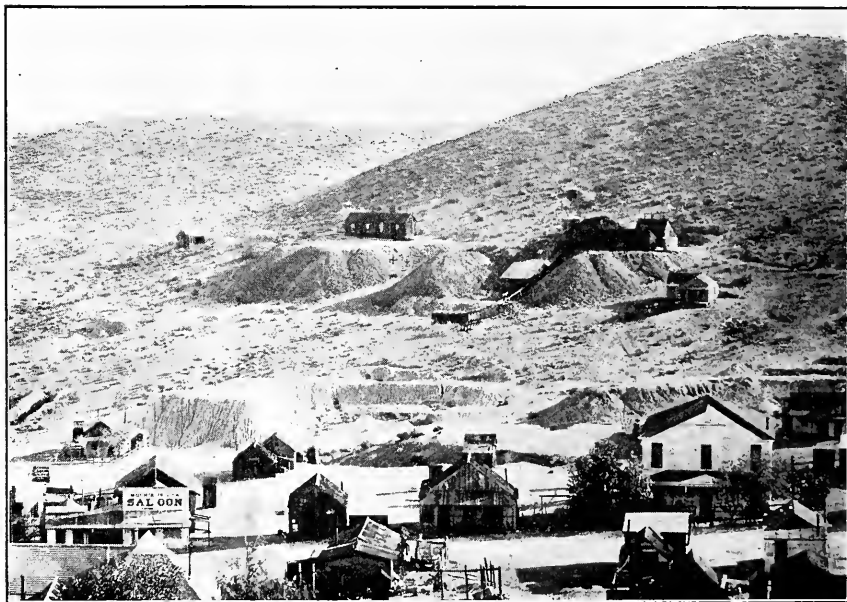
5. The business of mining sometimes makes a city: Can you not tell us about some of the cities and towns of California that sprang up because of mines near by? If you will travel through the mountains you will find towns that are supported chiefly by miners. Whenever it happens that the mines cease being worked the miners leave and the towns become almost deserted for lack of business. If the lands about can be cultivated and farmers make their homes there, then the town will not be wholly abandoned.

6. **Towns sometimes spring up in the desert:** Perhaps you would like to know how it is that we sometimes find a town in a desert. If two railroads cross each other in the desert, and people have to change cars there, a town will spring up. If there are mines near by the town is the source of supplies. Such towns are not pleasant places in which to live because water is so scarce it cannot be used for trees, gardens and lawns.

WHERE WOULD YOU START A VILLAGE IF YOU WANTED IT TO BECOME A MANUFACTURING CITY?

Would you not first seek a place where there was cheap water-power, fuel or electricity? Do you know of places in California where any of these things can be obtained?

In planning to build mills or factories you must also have in mind the possibility of getting raw materials to use in the factories. Besides this you must be able to ship your manufactured articles to market. Mention some place in California well situated for manufacturing.



This village grew up in the desert because of a mine nearby. It does not look like a very pleasant place in which to live but underneath the piles of rock and earth are rich gold mines.

WHAT ADVANTAGES MUST A VILLAGE HAVE TO BECOME A COMMERCIAL CITY?

If you had visited San Francisco when it was a little village you would surely have said what a fine situation this place has for a great commercial city. On one side is the bay, large enough to hold all the ships of the world. You can sail out through the Golden Gate onto the broad Pacific Ocean and thus reach almost every country with which you might wish to trade.

From San Francisco you can go up the Sacramento River into the very heart of California, where the rich farm lands stretch away to the north and south as far as you can see. Can you find any city that is better situated for trade and commerce than San Francisco?

WHAT INFLUENCE HAS A GREAT CITY UPON THE KIND OF WORK CARRIED ON IN THE SURROUNDING COUNTRY?

The people of a city need much fresh country produce every day. This can be supplied to them cheaper and in better condition if it is grown near by. Because of this need all the fertile lands lying around a city are given over to the growing of vegetables and small fruits. The lands less suited to these products are covered with dairy cattle. Those products that can stand being shipped a long distance, such as grain, apples and oranges, can be grown far away.

HOW WE TELL DIRECTION.

What are the different means by which we can tell the direction of a place? One is as follows: Stand with your right side toward the sunrise and your left toward the sunset. Now raise your right arm until it is extended straight out from the shoulder and it will point toward the *east*. Your left arm similarly extended will point toward the *west*. Your back will be toward the *south* and your face toward the *north*.

If at noon you stand with your back toward the sun and extend your arms as before, you will have the same four directions. Go out of doors on a clear night and find the North Star by means of the Great Dipper and its two pointers. If you face this star your back will be south as before. Your right hand will be toward the east and your left hand toward the west.

If it is cloudy and the sun is hidden, you can use a little instrument called a compass. This consists of a slender iron needle having the properties of a magnet. When this is hung at the middle so that it will swing freely it always points toward the north or very nearly north. When we speak of the four points of the compass we mean north, south, east and west. If we want any direction half way between any two of these, we say, for example, northeast, southeast, etc.

IF YOU WISHED TO VISIT A FRIEND LIVING SOME MILES DISTANT, HOW COULD YOU FIND THE WAY TO HIS HOME?

1. **He might write telling the direction and distance:** If your friend lives ten miles to the north, south or east you would have little trouble in finding his place if the country is level. In such places roads are usually laid out according to the "points of the compass," that is, in north-south and east-west directions.

Where the country is rough and hilly, roads do not follow straight lines but wind here and there seeking the easiest way. If your friend lived toward the east your directions might then read like this:—"Follow the road leading in a northeasterly direction until you come to a creek. Cross the creek and take a branch road turning to the right past a school house. A little distance farther the road winds around a hill and then crosses a marsh. Beyond the marsh it climbs a long hill, then descends to a river. A mile beyond the river and on the right side of the road lies my home."

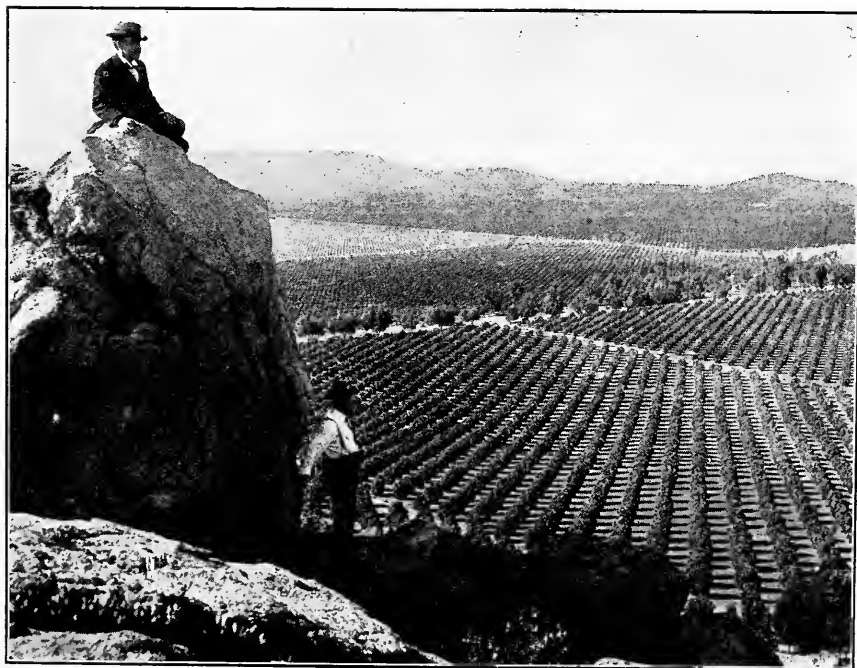
2. **You might obtain photographs of the country:** Photographs of the scenes along the road to your friend's home would help very much in finding the way. Photographs, you know, picture the country just as it appears to your eyes, but it would take a good many and would be quite expensive. People who travel must have some better means of finding their way about.

3. **A miniature of the country would serve very well:** If you can imagine the country through which the road leads to your friend's house made very small, it would then be a miniature. This miniature or *model* or *relief*, we use one of the two latter names in our geography studies, shows the country as it really is. We might make this model of clay and small enough so that we could carry it about. We might

think of the model as a toy country. It represents the real country just as the toy houses, animals and trees represent the real houses, animals and trees.

If you will study carefully the model of the country that you will have to cross to reach your friend's home, you will find shown on it the same things that you see in the real country. There are the hills with the road winding among them, the valley through which the river flows, while here and there are farmhouses. You would surely be able to find your way with the aid of the model, but it would be heavy and awkward to carry.

3. Your friend might send you a plan of the country: A *plan* of the country is made upon a smooth sheet of paper. It may be of the same size as the model which we have just been talking about. It differs from the model in having no real hills and valleys. It would be like the model if the latter were flattened out smooth. A plan of the country is what we would see if we were in an aeroplane high in the air. In looking



This is the picture of a valley. It shows the valley as it appears to be. If we wanted to see it as it really is we should be directly above so as to look directly down upon it.

down we could see the rivers, roads, forests and houses, but we could not tell where the hills were unless the sun were low enough to make them cast shadows. We commonly use the word *plan* for a drawing made of a house, garden, park or other small bit of country on which we put all the different things we could see if we were high in the air and looked down upon them. But if we want to show the hills, mountains and valleys, we make what we call a *map*.

4. **What do we mean by a map?** To make a map we measure the position and size of everything in that part of the country we wish to show. We make a drawing just as we would of the school room or school yard. We do not, however, put upon a map pictures of the real things in the country, but certain marks which stand for them. Some of these marks, colors or shadings tell us where there are hills, where the valleys lie and where the slopes are steep. These things do not show us the real country as does the relief map, but they help us to form pictures in our minds of how the country looks.

A map is like a page of a book. We have to know the meanings of the letters and words before we can understand the story they tell. If you can read the map you can very easily find your way to your friend's home. The map tells you at every step of the way the sort of country you are passing through and what to look for before it comes in sight.

A MAP IS VERY DIFFERENT FROM A PICTURE.

When we want a picture of some pretty country scene we draw or sketch it just as it appears to our eyes. The picture may contain trees, a river, hills and mountains. Those that are near look very large, while those far away appear small, even though they are really large. If we climb to the top of a hill to get a better view, we find that our picture no longer looks the same. It appears so different that we hardly know it. The kind of *picture* we make of a bit of country depends on where we are when we look at it, but a *map* is made to show the country as it really is and always looks the same.

A MAP IS THE BEST GUIDE IN A STRANGE LAND.

If you were in a strange country one of the first things you would try to get would be a good map. With the aid of

a good map you could find out all about the country before you had traveled over it. You could find upon the map the places to which you wish to go. You could tell how far it was and whether the road would be level or hilly. You could tell whether you had to cross any mountains. You could tell where the towns were if you wished to stay over night.

The people who first visited California had nothing to guide them or to tell them what sort of a land lay ahead of them. They made their own maps and often drew by guess those parts which they had not seen. Maps made in this way sometimes exposed those who came later and tried to use them to great danger. General Fremont, who explored much of our state, once nearly lost his life by depending upon an incorrect map. His map showed a river flowing across the great Sierra Nevada mountains. He tried to find this imaginary river and so got lost in the heart of the mountains in mid winter.

HOW PLANS, MAPS AND MODELS ARE MADE.

1. We will first make a plan of the school room: This should show what we would see if we looked down into the room from above. We would see the children's desks, the teacher's desk, chairs and anything else that the room contained. To draw a plan of this room on a sheet of paper we shall have to make it smaller than it really is. To find out how much to reduce it and what scale we must use we take a tape and measure the sides of the room. If it is thirty feet by forty feet we might make our drawing of such size that one-quarter of an inch would equal one foot. In that case the drawing would be ten inches by seven and one-half inches. In the same way measure and reduce the size of every object in the room.

2. A plan of the school yard: First measure roughly the sides of the yard so that you will know the scale that must be used. Perhaps you can use the scale of one foot equal to one-eighth of an inch. Since in making the map of a bit of country we always draw it so that north is at the top of the paper, south at the bottom, east at the right hand and west at the left, we will make this arrangement in drawing the yard. To do this we shall need a compass. Stand at one corner of the yard and with the aid of the compass find if the sides of the yard lie east and west, north and south. If they do you can draw the lines of the yard parallel to the sides of your sheet

of paper. If the sides of the yard do not lie in the direction of the four points of the compass, find the angle they make with the direction of the compass needle. Then draw them upon your paper, so that they will make the same angle with the north and south line of the paper as the lines of the yard do with the compass.

You can now make a plan of the block in which the school stands, or of some park near by. We might call this plan the simplest form of a map. But a real map, such as we use in our study of geography, shows many other things besides those we put in a plan.

3. A relief model of the country in sight of the school: We cannot go to the trouble of actually measuring the region of which we wish to make a model, for it is too large. It will answer our purpose, however, if we mold the clay so as to give the different objects which we wish to show the size and posi-



The rivulets gathering from the rains have worn little gullies on the hillside where there are no grass roots to hold the soil. The little gullies shown by the shadows we can imagine are real canyons and the ridges between them mountains. They appear much as a mountainous or hilly country does when the sun is low enough to cast shadows. Thus the photograph helps us to understand how it is that the real mountains and valleys of the earth can be shown upon a flat surface or map.

tion which they appear to have. If you will look over the country from some high point you can fix pretty well in your minds the places where the hills and valleys lie, the position of the town, the school house and other objects. Make the different objects as nearly as you can in their real proportions. That is, if one hill is half as high as another, make it half the size of the other on the model. Arrange the model so that north will come at the top, or, if it is lying flat, so that north will be in the direction of the side that is farthest away.

In finishing the model make the creeks and rivers blue; also lakes or the ocean if it is included. Show the houses by little squares of white and the roads by two fine parallel lines. Trees might be shown by small circular markings.

4. From a model a map can be prepared: We will now make a map from the model, taking care to have north toward the top of the paper. We will make the map the same size as the model so that an inch on the model will be an inch on the map. Draw first the rivers and creeks and any other bodies of water that appear on the model. To show the hills on the flat surface we shade the paper on one side of them. This gives an appearance similar to the shadows made by the sun when it is near setting. We can also show the slopes of the hills by making short parallel lines. These must be made heavy and close together to indicate steep hills. If the slopes are gentle the lines should be made lighter and farther apart.

Next draw the roads and locate the houses, including the school house. If there are any marshes show them by little groups of short lines like tufts of grass. The forests you can show by irregular or circular markings.

If, now, you have learned the meanings of the different marks of the map you can form a picture of the country in your mind almost as easily as though you had the model or the real country before you.

THE MAP IS MORE CONVENIENT TO USE THAN THE MODEL.

The model is heavy and difficult to carry about. Besides it is easily broken. We can print the map upon thin, light paper and roll it up or fold it so that it will take up very little room. We study the model first because it is easier to understand. It is an exact copy, only on a very small scale, of the real country. In looking at the model we see the country as



RELIEF MAP
OR
MODEL
OF
CALIFORNIA

it is, though very much smaller, but in looking at a map of the country we have to picture it in our minds.

FROM SOME HIGH POINT NEAR THE SCHOOL COMPARE THE COUNTRY IN SIGHT WITH A MAP OF THE SAME.

1. **The map shows the hills and their slopes:** Spread out the map so that the top is toward the north. It now lies in the same position as the country that it shows. If there are any hills in sight find them upon the map, and see if they are in the right position. Notice farther if the deeper shadings of the hills on the map correspond to the steeper slopes of the real hills.

2. **The map shows the river and the tributary creeks:** Find all the streams you can in the country spread out before you and see if they are rightly shown on the map. Which way does the river flow? Notice that the creeks turn down the valley as they flow to meet the river. This will help you to tell in which direction the river runs. Trace one of the creeks back to its starting place in the hills. Find out in what part of its course it flows the swiftest.

3. **The map shows the lowlands:** Point out on the map the valley through which the river flows. The valleys on the map are not shaded as are the hills, for they are nearly level. Often the valleys or lowlands are colored a pale green on the maps. Note if the hills come close to the river at any place and if they are steeper in such places. If any part of the valley is marshy note how the marsh is shown on the map.

4. **The map shows the farm-houses, the town and the roads leading to it:** Point out the roads marked on the map. Compare them with the real roads that you can see. Tell why the roads follow straight courses in the valley while they wind here and there in the hilly country. Find the town on the map. Can you tell from the map why the town was built where it is? Point out any farmhouses that you know.

WHAT THE RELIEF MODEL SHOWS OF THAT PART OF THE RIVER BEYOND THE HORIZON.

1. **The whole of the land drained by the river is its basin:** Before us is a model of the whole country drained by the river and its branches. This we call a *basin* because the land slopes toward the river from all sides except one. Upon one side there is an opening and through that the river flows away

toward the ocean. If there were no gap in the sides of the basin the water could not escape and would form a *lake*.

If we should climb to the rim of the basin we would find the land sloping away on the opposite side toward another river basin. This high land between two river basins which sheds the rain in different directions is a *watershed* or *water parting*. If you followed the water parting all around the basin in which the river rises, you would find it sharp in most places like the peak of a steep roof. Sometimes the watershed is so flat that you can hardly tell which way the water flows.

2. The slopes are steepest about the head of the river: Our model shows that the farther up the river we go the steeper its channel becomes and the swifter it flows. At the same time the valley narrows and is replaced by a canyon, while the hills become very steep. In this part of its course the river dashes over huge rocks and occasionally there are waterfalls. Many branch streams come to join the main river. Each one flows in a little canyon of its own. Here and there are springs which help feed the river. By the time we have reached the head of the stream it is reduced to a tiny rivulet.

3. Most of the land suited to farming is found along the lower course of the river: We will now follow the river from our home downward towards its mouth. The model shows that the valley becomes broader. Many side valleys join the main valley and help widen it. The hills now do not rise as high and have gentler slopes. In the lower valleys nearly all the land is suited to farming. Even the hills are plowed and made to support crops.

4. The sort of slopes the river basin possesses determines what the people who live in it must do: We have seen that farming is the chief industry in the lower part of the river basin because of the gentler slopes and richer soil. Part way up the river where we live the farm lands form about half the surface. The most of the hill slopes are steep and are used for pasturage. The hills also support scattered trees which supply fuel for the homes.

Toward the head of the river the patches of land that can be cultivated become smaller. It is colder here than in the lower valleys. There is more rain and often snow falls. Most of the slopes are too steep even for pasture, but they are

not waste land, for here grow the heavy forests whose trees are so valuable for lumber.

As we climb to the very tops of the mountains rising along the watershed we find ourselves in a very different region. Here it is so cold that hardly anything can grow, while the snow falls many feet deep. Steep rocky slopes appear all about us. Here the miners can more easily discover the veins of ore, which farther down the mountains are often hidden by soil and vegetation.

WHAT DOES THE MAP SAY ABOUT THE RIVER BASIN?

The map tells us the same story as the model, only that it is more difficult to understand. The mountains on the map do not stand out as they do on the model and so we add dark shadows to make them appear to do so. The lowlands on the map are left without shadows and so we know they must have flat or gently sloping surfaces. We can easily tell from a good map what different parts of the river basin are suited for.

THE MAP SHOWS SOME THINGS THAT THE MODEL DOES NOT.

The model is intended chiefly to show the appearance of the country as Nature left it. A map usually shows many things that people have put upon the land. The map of our river basin shows the scattering houses, towns, roads, railroads, bridges and canals. The map shows the straight roads in the valleys and the winding roads in the mountains. A good map is more useful than a model as a guide in a strange land.

MAPS TELL US HOW THE COUNTRY LOOKS ABOUT HOMES IN DIFFERENT PARTS OF CALIFORNIA WITHOUT OUR HAVING TO VISIT THEM.

1. The map of the country about a home in Central California: This map shows no hills at all. The land appears to be almost flat for many miles in every direction. We might call this level land a plain, but we are sure we must be in either the Sacramento or San Joaquin Valley. We learn from the map that a river flows past the home and that it has cut a trench in the valley. The river does not fill the whole of the bottom of the shallow trench, but winds from side to side. The map shows a little town, but as it does not lie close to the river the latter is probably not navigable. The roads run in straight

lines north and south and east and west. The town lies where two of these roads cross.

2. **The map of a home in Eastern California:** The map of this home says that the country about it is very rough. The river which flows near it lies in a deep canyon with very steep slopes. The river winds as though it were trying to find an easier way through the rocks. The roads also are very crooked. The map says that on one side of the home there are still higher mountains. It says farther that there is but little land level enough for the farmer to plow. This home must be in the Sierra Nevada mountains.

3. **Map of a home in Southern California:** This home lies in a valley at the southern foot of steep and lofty mountains. The valley is very long and slopes gently down to a river. The map tells us that the streams while they are in the mountains flow through deep and narrow canyons. There does not appear to be a bit of land anywhere in these mountains level enough to be cultivated. The map says farther



To make a map of the region about a home upon a plain like this would be a simple matter. It would be like drawing a plan of the school room as there are no hills or valleys or streams.

that after issuing from the mountains onto the valley slopes the streams seem to lose their definite channels and to flow anywhere over the surface. This must be because they are so loaded with sand and gravel from the steep mountains that they fill up their channels in the gently sloping valley and so wander here and there without any banks. The number of roads and houses and villages tell us that this must be a thickly settled and fertile valley.

4. **The map of a home on the coast:** The map of the country about this home tells us many things. On one side is the ocean. On the other side are mountains running parallel with the coast. Between the ocean and the mountains there is a long narrow strip of smooth land that slopes gently down to the ocean cliffs. This lowland next to the ocean is sometimes called a valley and sometimes a plain. The smooth surface of this coastal plain tells us that it was once beneath the ocean.

The map also shows a river flowing through the mountains and into the ocean. The river has cut a narrow channel across the plain. At the mouth of the river there is a sand bar and behind it a lagoon. Near the mouth of the river are the ranch buildings. This home is difficult to reach and it is equally difficult to ship away produce. There is no safe landing for boats and a long journey over rough roads is necessary to reach the railroad.

WE WILL BEGIN THE STUDY OF OUR CALIFORNIA HOME FROM A RELIEF MODEL.

1. **The model shows the position and shape of California:** California is one of the largest states of the Union. It lies upon the Pacific Ocean about midway of the western coast of North America. California is long from northwest to southeast but extends inland only about a quarter of its length. With such a long coast line what wonderful advantages we have for trade. We can set sail upon the waters of the ocean that wash the shores of our home state and journey to the farthest parts of the earth without leaving our boat.

2. **The model shows that much of the state is rough and mountainous:** As we first look at the model or relief map it seems as though so much of California was rough and mountainous that it could not support many people. We must not forget, however, that California is a very large state and that the model has been made on a small scale. There are hun-

dreds of little valleys in which people live that you would have difficulty in finding on the model. Much of the surface that appears mountainous contains patches of nearly level land where people live.

3. **The model shows one very large valley:** When we look at the model there is one very large valley that at once attracts our attention. This lies in the heart of the state with mountains all around it. This valley is so large that if you traveled on a swift express train it would take you the whole of a long summer day to ride from one end to the other. Do you not think we might better call this region a plain?

If you study the model you will find many other valleys. Some of these are in the coast mountains. Others in Southern California. East of the highest mountains are many large valleys.



Would you not like to live in this beautiful valley? Here are vineyards and orchards and running streams back of which are the hills covered with oak, madrone and spruce. To make a map of this valley we would want to show the hills, the creeks, the forest, the roads and orchards as well as the houses.

4. **Mountains lie along the coast of California:** The model shows that the coast of California is bordered by mountains and that the shores are usually bold and rocky. We can understand how it is that the first people who sailed along these shores thought the interior was all mountains. Along the middle part of the coast the mountains appear to rise directly out of the ocean. At other points where large rivers empty into the ocean there are broad valleys.

5. **The highest mountains lie near the eastern side of California:** We can readily pick out the highest mountains. They extend almost north and south along the east side of the Great Valley of which we have already spoken. There are few valleys in these mountains such as we find among the Coast Ranges. The many streams seem to flow in deep narrow canyons. The mountains look as though we could easily climb them from the west but upon the east they appear very steep.

6. **The model shows the rivers and river basins:** The largest basin lies in the heart of California. Many rivers enter it but they all unite to form one which flows away to the ocean through a gap in the Coast Mountains.

Another large river appears upon the northern part of the model. This river winds through high mountains to reach the ocean. Turning now to the southeastern part we find one large river that forms the eastern boundary.

7. **A part of California appears to have no rivers that flow to the ocean:** If we look carefully at the model we shall see that the eastern part has few rivers. How can we account for this strange thing? Stories tell us that long ago, when people traveled in ox wagons to California, they suffered and sometimes died in this region where we see no rivers. It must be that this land lying to the east of the lofty mountains is a desert.

If you will study the model carefully you will discover that even if there had been rivers here they could not have reached the ocean. There is a continuous watershed of mountains stretching between the desert and the ocean. The water that falls on the western side of these mountains reaches the ocean but that which falls upon the eastern side flows into basins from which there is no outlet. Look at the model carefully and you will be able to find some of these basins. Perhaps you can find two or three with lakes in them. So little

rain falls in eastern California, and so much of what does fall flies away again in the air that though the lakes are fed by living streams from the mountains they never become any larger.

8. It appears easy to travel in the direction in which the mountain ranges lie:

The chief mountain ranges lie parallel and extend in nearly the same direction as the coast. Between the mountains lie valleys which appear to offer convenient routes for wagon roads and railroads. Note how far you can travel in some of the valleys without having to cross any mountains. Do you not think it appears much easier to travel up and down California parallel to the coast than to start at the coast and travel toward the interior?

9. Gaps or passes make it easier to cross the mountain ranges: If the mountain ranges were high and steep throughout their whole length it would be almost impossible to cross them. Look at the model carefully and you will find many low gaps or passes which make it easier to go from the coast to the Great Valley. If it had not been for the mountain passes it would have been much more difficult for our grandfathers to reach California.

10. The coast of California has few good bays: The stories of the early navigators that sailed along this coast tell us that they found few good places to anchor. The coast line as you see from the model bends in and out, but not enough in most places to give protection. If there had been more harbors upon our coast the settlement would have been easier. It would also be easier to ship away our products.

11. There is only one great bay: The model shows us one great bay upon the coast of California. It has a narrow entrance and several arms extending far into the interior. One arm reaches through the Coast Mountains to the Great Valley. Nearly half the state slopes towards this bay. It must form the great centre of trade and the point from which the most of our products are shipped by water.

WHAT WE HAVE LEARNED OF THE WIND, THE RAIN AND THE SUNSHINE WILL, WITH THE AID OF THE MODEL, TELL US MUCH ABOUT THE CLIMATE OF OUR STATE.

1. What do we mean when we say the weather has been pleasant? When we say we are having pleasant weather we mean that for a little time, perhaps a few days, the air has not been too warm or too cold for our comfort, that the sun has shone out of a clear sky and that there has been little wind. If there has been a great deal of rain and wind we say the weather has been stormy.

2. What do you mean when you say that you live in a warm, dry and windy climate? When we speak of the climate of a place we mean the kind of weather which it has through a long time, such as a year or several years. If the air of your home is unusually warm, though there may be some cold days, we say it has a warm climate. If the wind blows a great deal we say the climate is windy.

3. Explain from the model why some parts of California might have a wet climate.

We have learned that the clouds bring the rain from the ocean. We have learned also that more rain falls upon the cool mountains than in the hot valleys. It must be, then, that heavy rains fall upon the coast mountains because the storms coming from the west strike directly against them. Now if we turn to the mountains in eastern California we find that they are much higher than the Coast Mountains. The clouds that pass over the latter strike the high mountains and they, too, have heavy rains and snows.

4. From a study of the model where would you say the least rain falls?

Since the rain clouds usually come from the west and lose the most of their water particles upon the mountains we should look for little rain in the valleys east of the mountains. We should say that these valleys ought to be dry because they lie in the shadow of the mountains. If we seek upon the model for the lowest lands behind the highest mountains we shall find them in eastern and southeastern California. Here are the barren deserts upon which very little rain falls.

5. Point out those valleys that have a cool climate: Those who have been to the ocean know that at whatever time of the year they go there the water is cool. The water so cools

the winds that blow over it that the land near the coast is also cooled. The ocean winds blow up the valleys which you can see upon the model, carrying the chilly fog far inland. Find upon the model the one break in the Coast Mountains through which the winds and fog can reach the Great Central Valley.

6. Point out upon the model those valleys which you think ought to be very hot:

If the Coast Mountains break the cool winds then the valleys lying to the east of these mountains ought to be very warm in summer. The farther we go the hotter the summer weather ought to become until we finally reach the desert valleys in southeastern California. If your home is in any one of the hot valleys point out its position upon the model and tell why it is hot.

7. Point out those parts where it is coldest and where much snow falls:

We have learned that it is colder on the mountains than in the valleys. We have seen snow on the mountains while the flowers are blossoming in the gardens at the foot of the mountains. On the high mountains it is very cold and the snow sometimes falls ten to twenty feet deep. The mountains toward the north ought to be colder and have more snow than those toward the south. The model tells us where these cold snowy regions are.

8. Can the model tell us anything about the forests? The tops of the high mountains are too cold for trees while the valleys are too dry except for the oaks. Thus we know where to look for the great forests of pine, spruce and fir. They grow in belts on the mountain slopes where it is not too cold nor too dry. Thus the model shows us where the forests are to be found.

THE MAP OF CALIFORNIA.

1. The map shows many things that do not appear on the model: Having learned from the model how the surface of California looks we are going to find out from a map some of the things men have put upon it. Among these things are cities, roads, railroads and canals. Maps we have learned are shaded to show where the highlands and lowlands are. This makes it possible to tell from the map where most of the people live, and why the railroads and roads are built where we find them.

2. **Where do we find the cities?** The cities and towns are marked upon the map just where we should expect to find them. Here are San Francisco and Oakland upon a great bay from which ships can sail to all parts of the world with products of the nearby valleys. Here are San Diego and Eureka upon good harbors. Here is Sacramento on a river with a great valley all about it. Here is Fresno in the midst of a fertile valley which is watered from a great river. Here is Los Angeles where many roads meet.

3. **What does the map say as to the position of the roads and railroads?** The greater number of the roads and railroads appear to follow the valleys for not only is it easier to build them there but most of the people live upon the lower and more fertile lands. Sometimes, however, it is necessary to cross the mountains from one valley to another. To do this in the easiest way low places or *passes* are selected. Examine the map carefully and see if this is not true.

The map shows us also that the railroads do not usually follow the ocean shore for any great distance. This is because high mountains rise so close to the water that it would be very difficult to build them there. Point out upon the map those parts of the coast of which this is true.

WHAT BROUGHT OUR GRANDFATHERS TO CALIFORNIA?

It was the discovery of shining particles of gold in the beds of some of the mountain streams that brought our grandfathers to California. They braved all kinds of dangers in a land that they knew nothing about in the hope of finding some of this gold. Now people come to California to raise fruit and enjoy the pleasant climate, but in those early days nothing but gold would have led them to leave their comfortable homes and come to this new land where they would have to endure so many hardships.

HOW DID OUR GRANDFATHERS FIND THE JOURNEY TO THE LAND OF GOLD?

1. **They had an unknown way to travel:** At the time of the discovery of gold there were few people besides Indians living in what is now California. There were Missions and little Spanish towns along the coast and in the nearby valleys. Here and there were adobe ranch houses and around them herds of cattle, horses and sheep. But most of the great land between these settlements and the far away Mississippi Valley

was almost unknown. A few hunters and trappers had visited this wilderness of mountains and deserts but there were no correct maps. When gold was discovered people made their way across this land as best they could.

2. **The Pioneers met many dangers:** The Indians did not like to see white people come into the country and kill their game and so they fought them wherever they could. The country was not easy to travel over for the mountains lay directly across the route which the emigrants wished to take. In winter the snows made it impossible to cross the mountains. In summer water and feed for their stock was hard to get upon the broad sandy deserts.

3. **There were no lakes or rivers that could be used:** If you were starting out to travel across a rough country would it not be much easier if you could find some waterway? How easy it would have been after crossing the Rocky Mountains to embark upon some westward flowing river and follow it down to San Francisco Bay.

4. **The way to California by ship was long and dangerous:** Many people came to California by boat, but the journey took several months. There were few steamboats and the route around Cape Horn was dangerous. There was no Panama Canal to shorten the journey. Those who crossed the Isthmus afoot or on horseback were likely to get some tropical fever.

HOW DID THE EARLY SETTLERS OBTAIN THEIR SUPPLIES?

The early settlers could bring little with them and the journey took many months. They had to depend upon wild game for much of their food. Flour could be obtained in San Francisco, to which place it was shipped by boats, but it, as well as everything else, cost a great deal. For a long time there was little farming because every one wanted to hunt for gold. The soil of the valleys looked so inviting, however, that after a time those who were disappointed in finding gold turned again to farming.

HOW DID HOMES FINALLY COME TO BE BUILT IN ALL PARTS OF CALIFORNIA?

My home, says the first one to speak, is in the foothills of the Sierra Nevada Mountains. Grandfather came here seeking the gold that he had heard was scattered through the gravel in the beds of the streams.

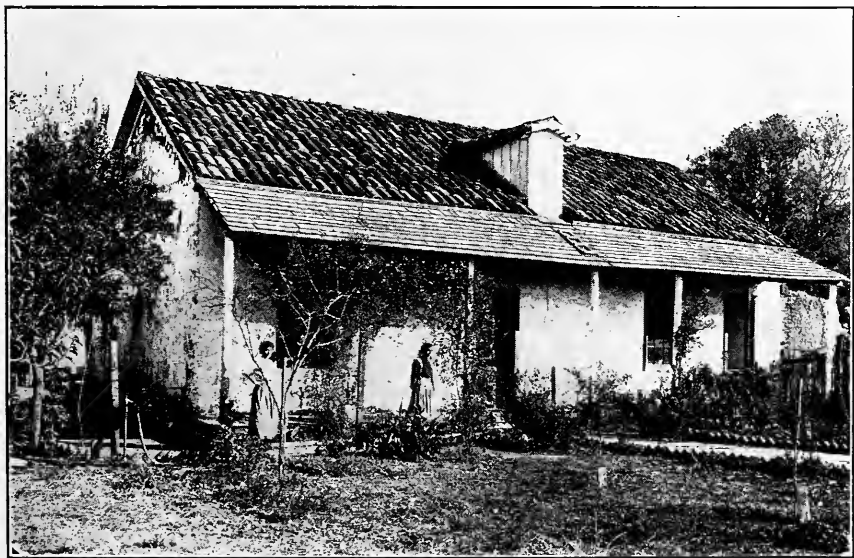
My grandfather, says a second, came to California to raise wheat. He thought that was a sure way of making a living, while mining was very uncertain. He made his home in the Sacramento Valley.

My home, says a third, is near Fresno. Here father is engaged in growing grapes and making raisins. Many other people are doing the same thing and we may be able soon to supply the whole world with raisins.

My father, says a fourth, wanted to raise cattle. He bought an old Spanish ranch in the Coast Ranges. It was so large it took a vaquero two days to ride around it. This is a good cattle country for there is an abundance of grass on the hills and the winters are not cold.

Says another, my father picked out a home in a valley in the Coast Ranges. Here it is not hot enough to grow oranges but prunes, almonds, peaches, pears and cherries do well. There are also miles of vineyards and many gardens where vegetables of every sort are grown.

My home is in a mountain valley, says still another. Father wanted to raise apples, and as this fruit does best in the



One of the old Spanish homes in Southern California. The walls were made of adobe bricks because there was little timber at hand. The roof was covered with baked tiles. Later a porch was added and covered with shingles which were then easier to get than tiles.

mountain valleys where snow falls in winter we moved to this place. Here there is more rain than there is in the lower valleys and the grass does not dry up so quickly. The mountains are pleasant in the winter because we can go coasting and sometimes there is skating.

My home is in a beautiful valley in Southern California, says a boy who lives in the midst of orange orchards. Here it never becomes cold and the gardens flourish most of the winter. To be sure it does not rain much, but the mountains supply the water the orchards need. We have to thank the mountains for many things and among the most important of these is water. If it were not for the mountains this would not be a region of orchards and gardens.

I live in the mountains of Northern California, says a mountain boy. My father is a lumberman. He helps supply the boards, beams and shingles for your home. The great trees many hundreds of years old are growing all about. We are going to leave some of the finest of these giant trees for the people from other places to come and see.

A desert home is mine, says the last boy. It is pleasant enough in winter but so hot in summer that we hardly know what to do with ourselves. We are at work getting borax from an old lake bed. If we could find borax anywhere else we would not stay here.

HOW DID THE EARLY SETTLERS REACH THEIR HOMES IN CALIFORNIA?

The people who first crossed the mountains to California used oxen to haul their wagons, or "prairie schooners," as we often call them. They had to make their own way through the mountains as best they could. They had no bridges upon which they could cross the gulches and rivers. It was many years before the main route over which they traveled became a good road.

The miners searching for gold did not stop to make roads. They packed their supplies upon the backs of horses, mules or burros and were thus able to travel through the roughest mountains with scarcely a trail.

As more people came to California roads were finally built to all the important towns both in the mountains and in the valleys. Over these roads traveled the great stage coaches with their six and eight horses.

How much easier it would have been traveling in California in the early days if there had been more navigable rivers. The Sacramento is the only important river highway. Although this river does not take one very far, yet we must not despise it for it leads from the ocean into the very heart of our great state. It was very easy for people who came by boat to California to reach the mines in the Sierras, even before there were roads. One could change from the ocean vessel to a little river boat and thus reach many of the towns in the Great Valley of California.

HOW DO PEOPLE NOW REACH THEIR HOMES?

1. A few homes are easiest reached by water: Homes along the lower Sacramento and San Joaquin rivers are reached

easiest by boat. Produce is sent to market by the same means. Many towns situated upon the shores of San Francisco Bay receive and send goods by boat.

If you will look at the model or map of California you will see that many towns upon the coast have mountains



Mountain towns are reached by roads around the steep curves of which the old-time stage with its six horses used to dash at break-neck speed.

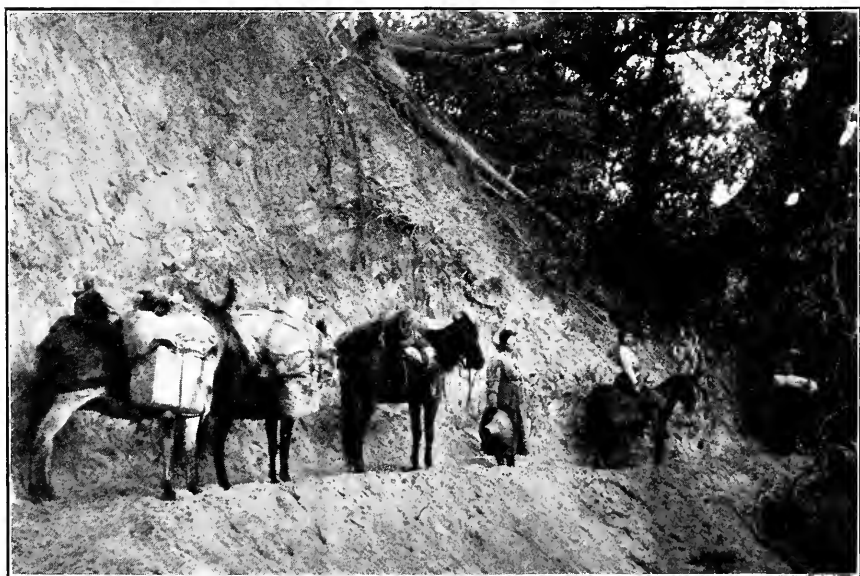
behind them so that it is difficult for them to trade with the interior. The absence of good harbors makes trade by the ocean dangerous although during calm weather most of these towns are reached by little coasting steamers. Where there are no landing places boats sometimes anchor a little way from the shore and load by means of a cable stretched to the land.

2. Railroads have been built through many valleys: Railroads have been built into all the larger valleys of California where many people live and there are large quantities of produce and

supplies to be carried. Railroads extend out in every direction from Los Angeles and San Francisco. People who have to work in the city can now live out in the country. How pleasant it is to live far away from the noise and bustle of the city. Railroads make it possible for the city worker to enjoy the green fields and fresh air. The railroads also make it possible for the farmer to send his produce easily and cheaply to the city.

3. **Wagon roads reach nearly all our homes:** If you start out to travel over California you will find that roads now lead to almost every home. In some places there is such a network of roads that it is difficult to keep from getting lost. It is only in the rugged mountains that you will find few roads.

4. **Some homes are still reached only by mountain trails:** Far away in the high mountains are the homes of miners that are reached only by trails. The mountain slopes are so steep and the canyons so narrow and rocky that it is very difficult to build roads to these homes. Trails suitable for horses or mules are, however, quite easily made in the roughest country. Pack animals will carry often as much as two hundred pounds and will follow a trail with perfect safety.



Homes in the higher and steeper mountains are still reached only by steep and narrow trails over which pack animals carry everything that is needed.

WHY DO WE SPEND SO MUCH MONEY BUILDING ROADS?

Good highways make it easy for the farmer to go to town with his produce. Good highways encourage city people to spend more of their leisure in the country. Good highways attract people who are looking for places for homes. People would rather make their homes in a state with good highways than in one with poor highways.

Our state is now building hard smooth highways from one end to the other. A branch highway is being built to the county seat of each county. The road bed is made of concrete so that traveling is not hindered by mud.

The Camino Real, meaning "King's highway" is an important highway being built along the old road which once connected the Missions. The Lincoln highway is another important road; it makes automobile travel easy and pleasant between California and the Eastern States.

WHY ARE THE RAILROADS OF GREAT VALUE TO US?

Perhaps we think railroads are useful chiefly as an aid in traveling from one place to another. Railroads have, however, a far more important use. Without the railroads our state never would have become noted as the land of orchards and gardens. Our largest market is far away across the mountains to the east. To this market the railroads deliver fruit, in refrigerator cars, almost as fresh as when it was picked. We could not send our fruits to this market by water because it would take a much longer time and much of it would spoil before it could be sold.

HOW DO RIVER HIGHWAYS COMPARE WITH RAILROADS?

Trains move faster than boats but it costs more to travel upon them. Trains are often delayed by washouts and other troubles. The railroad track requires constant care. The grading of the railroad bed is expensive. In rough country many bridges and tunnels are needed.

Boats have their highways already made for them. Sometimes there are rocks and sand bars in the way, but when these have been removed water highways need little care. Wherever there are rapids or waterfalls in a river the journey of the boat is stopped, unless a canal with locks is built around them. Boats are not often in danger on the ocean highway unless they are blown too near the land.

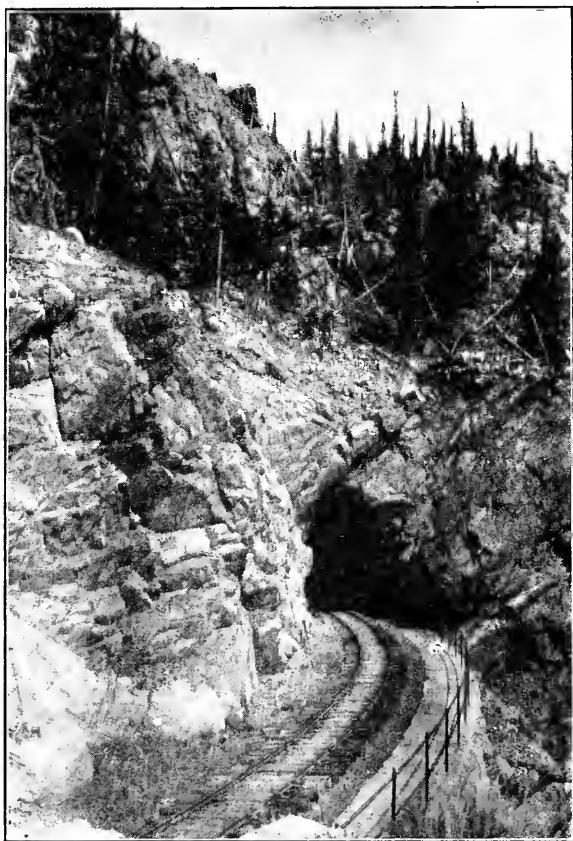
Our great water highway is the Pacific Ocean. Next comes San Francisco Bay and the streams flowing into it. The greatest of all these streams is the Sacramento river.

WHAT GUIDES US IN CHOOSING ROUTES FOR ROADS AND RAILROADS?

If you want to build a road to your home in the hills you look about for the easiest way. You will, if it is possible, build

the road around a hill rather than go over it. If it is necessary to cross a line of hills you look for a low place so as not to climb any higher than is necessary. You try to avoid rocky places and those where the slope is very steep. You also try to avoid making any large bridges.

In building a railroad the engineers seek first a route which gives a gentle grade so that heavy loads can be hauled. They seek to cross rivers where strong bridges can be built. They sometimes prefer to bore tunnels, miles



Railroads do not stop for mountains but tunnel directly through them.

in length, through mountains rather than to climb over their tops. If they do have to climb over a range of mountains they seek the lowest place just as the man does who builds a wagon road.

Another thing that determines where railroads are built is the amount of freight and number of passengers to be carried. Railroads run through rich farming districts, between harbors and interior cities, between manufacturing cities, into distant mountains where there are important mines and to every other place where there is business enough to make them pay.

MOUNTAIN RANGES WERE ONCE DIFFICULT TO CROSS.

People who came to California in the early days had much trouble in crossing the Sierra Nevada Mountains. There were rocky ridges and deep canyons in their way. There was also the snow, which falls many feet deep on these mountains. There are now good roads through some of the lower passes, but if you wish to cross over the high passes you will still have to go on foot or horseback.

Some mountain ranges are so difficult to cross that people have lived on opposite sides for many years without getting acquainted with one another. It was once thought that we could never build a railroad over the Sierra Nevada Mountains, but there are now two railroads that cross them. To escape the snow, which would otherwise block the railroads in winter, miles of snowsheds have been built. Sometimes a tunnel will be made through these mountains to escape the heavy grades and the snow.

CROSSING DESERTS WAS ONCE VERY DANGEROUS.

To reach California from the East we have to cross hot, dry deserts. The first people from the East came with ox teams. Many of the animals died in these deserts and sometimes the people themselves lost their lives.

In a far-off part of the world camels are used to take people and goods across the deserts. These animals are suited to the desert for they can go several days without drinking. Of all the animals that we have the burros or donkeys are best able to stand the dry hot deserts.

There are a few springs in the desert but they are far apart and hard to find. Unless you know the desert and its springs you should always carry water when you travel there.

The worst desert we have in California is Death Valley. This is one of the hottest places in all the world. It is called Death Valley because people have died there for lack of water.

IT IS SAFER TRAVELING ON THE OCEAN THAN IT ONCE WAS.

The boats used by Columbus when he crossed the ocean and discovered America were small and frail. Those used by the early explorers who sailed along the rocky shores of California were no stronger. The journey by water from San Diego to Monterey and San Francisco often took longer than the journey by land because of the head wind. It was dangerous also because of the fog, the rocky reefs, and capes without any light houses or fog horns. Now we can make this journey in safety in a day and night. The great steamers can make their way against the fiercest storms.

WHY IS IT THAT WE DEPEND SO LITTLE UPON PEOPLE OF OTHER COUNTRIES FOR OUR SUPPLIES OF FOOD?

The early Spanish settlers had herds of cattle and sheep and cultivated land enough to raise what they needed to eat.



We find almost every kind of climate in our California home. The summit of Mt. Shasta is as cold and snowy as it is in the far north. Directly underneath it are mild valleys where berries and fruits grow and where stock feed upon green meadows.

More than this they did not do because there was no market. When the gold-hunters came food became scarce and high priced. Nearly everything which they needed had to be brought by ships, which took months for the passage to California.

How greatly this has all changed. We now grow in California nearly every kind of grain, vegetable and fruit found in the world. The only food products which we cannot grow are those from the very hot moist parts of the world.

We could get along very well as far as our food is concerned if we were shut away from the rest of the world.

HOW IS IT THAT WE CAN RAISE SUCH A GREAT VARIETY OF PRODUCTS IN CALIFORNIA?

1. **California has many different kinds of climate:** If you could travel all over your state in the course of a few hours you would wonder greatly at the different kinds of weather people were having in different places. If you were on the coast on a summer day you would probably have on thick clothing. If you traveled inland across the coast mountains you would reach the Great Valley where only the lightest of clothing would be needed. If on a winter day you journeyed from this valley where orange trees were in bloom to the summit of the Sierra Nevada Mountains you would find yourself in an arctic climate where nothing could grow. If on the same day you journeyed southward from the mountains of the northern part of the state where there was a heavy snow storm, you would at last reach a valley in the far southern part where the sun was shining brightly and it was so dry that nothing could be grown without irrigation.

2. **Each kind of fruit, grain or vegetable does best in its own climate:** If you have a garden of your own you will have noticed that some plants grow thriftily and appear at home while others appear stunted and act as if they had a hard time to keep alive. This is because the climate and soil of your home are suited to some plants but not to all.

The best apples are raised in a cold climate. Sweet oranges can be grown only in a warm sunny climate. The date must have a very hot climate. Beans and beets do best where it is not too hot and dry. Melons do best in a hot climate and in a light or sandy soil.

We may conclude, then, that each kind of plant does

best in the soil and climate to which it has become accustomed. Our journeys over California have shown us that each place with a different climate has different plants. And as there are many climates there must be many sorts of plants, many kinds of grains, fruits and vegetables.

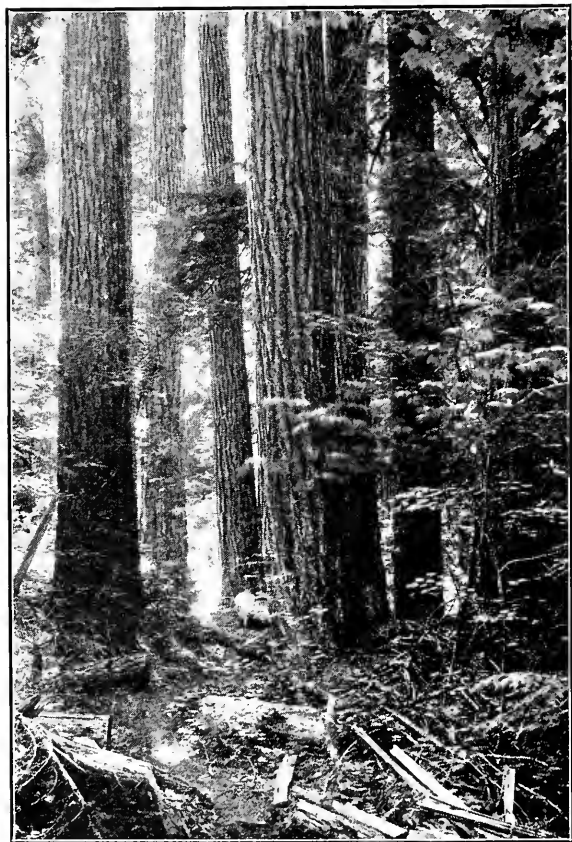
HOW IS IT THAT WE CAN OBTAIN THOSE THINGS THAT WE DO NOT PRODUCE SO MUCH EASIER THAN THE EARLY SETTLERS COULD?

In the early days there were no means of getting supplies across the broad land which lay between California and the Eastern States. Boats from around Cape Horn did not arrive

regularly. Steamers were few in number and it took sailing vessels six months to make the journey from New York.

There are now six lines of railroads entering California. They bring the things we need from every part of our great country. At present we do not need food products as much as we do manufactured articles or materials for use in manufacturing.

Fast steamers now connect us with all parts of the world. They bring not so much necessities as they do luxuries. Tea,



This is a scene in the great forest which covers the slopes of the Sierra Nevada mountains between the hot dry valleys at their base and the cold barren summits. Here there is just the right amount of heat and rain to grow dense forests of giant trees.

coffee, spices and manufactured goods from distant countries we could get along without.

HOW IS IT THAT CALIFORNIA HAS BECOME SO NOTED FOR ITS FRUITS?

We grow many kinds of fruit because we have many kinds of climate. But this alone would not make California widely known for its fruits. We must in addition be able to ship our fruits to those that want them. We have vast fertile valleys. We have learned how to take care of the orchards so that the fruit is of fine quality. We have learned how to ship fresh fruit and to can and dry fruit so that it is pleasant to taste. And last of all we have railroads and steamers to carry the fruit to any one who wishes to buy.

IN WHAT DIFFERENT WAYS DO WE DISPOSE OF THE GREAT QUANTITIES OF FRUIT GROWN IN CALIFORNIA?

1. **A large amount is eaten at home:** The people of California have fresh fruit and vegetables all the year around. When one sort has ripened and gone another comes in. Because fruit is so abundant and cheap we eat more fruit than do people in most other countries.

2. **Canning and drying of fruit is an important industry:** When there is more fruit than can be eaten or shipped to market fresh it is either canned or dried. Thus prepared, fruit will keep a long time and can be shipped to the most distant countries. California is known all over the world for its dried fruits.

3. **Large quantities of fruit are shipped to distant markets fresh:** Most of our fresh fruit sent to distant markets is carried by the railroads. Hundreds of trains made up of refrigerator cars filled with fresh fruit and vegetables start for the Eastern markets every week. Many of these travel almost as fast as express trains. Our California fruit thus reaches markets thousands of miles away in as good condition as when it was picked.

WHY ARE THE PEOPLE OF THE EAST SO GLAD TO GET OUR PRODUCTS?

1. **The climate of the East is cold:** The most important fruits that we ship East can grow only in a climate that is mild throughout the year. The most important of these fruits is

the orange. Then come lemons, grape-fruit, olives, figs and grapes. Grapes grow in the Eastern States, but not the sweet grape of which we make raisins. Before California had fruit to spare the people of the East obtained most of the fruits mentioned from Spain, a country lying far to the eastward across the Atlantic Ocean, although some came from Florida.

2. We have spring fruits and vegetables earlier than the people do in the Eastern and Northern States: Our early cherries and apricots find a good market among Eastern people before their own fruit is ripe. Thousands of carloads of early melons are shipped from Imperial, that hot valley in southeastern California. They reach market before those from any other part of our country. Many carloads of early asparagus go to the East before their asparagus is ready. Celery is also shipped East in large quantities.

3. California ships away a great deal of lumber: The Eastern States were once covered with forests, but they have been mostly cut away. The climate of many Western States is too dry for forest trees to thrive. To all such places California exports hundreds of carloads of lumber. Our forests will be inexhaustible if we only manage them carefully.

WE IMPORT FROM OTHER PARTS OF OUR COUNTRY SOME THINGS THAT WE MIGHT RAISE.

Before the planting of our great orchards California was noted for its cattle and wheat. Now so much of the land is used for other purposes that we do not raise all the beef and mutton that we need. We also import ham and bacon from the East. Many carloads of chickens are brought here every year. We might easily produce all the chickens and eggs that we use. Most of our corn comes from the East, although we could raise all we needed. We once imported all our cotton and rice, but now we have learned that these products thrive in California.

WHAT FOODS USED IN YOUR HOME ARE NOT GROWN IN CALIFORNIA?

Among the most important of those foods that we do not raise are tea, coffee, cocoa, cane sugar, tapioca, pineapples, bananas and spices. There is not one of all these that we could not get along without if we had to do so. Some of these things we may be able to grow on a small scale, but the most of them

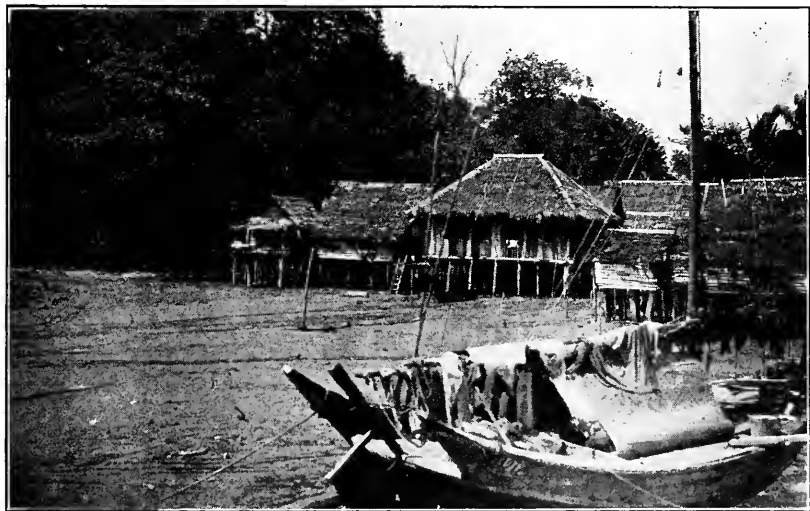
come from hot, moist tropical lands, the climate of which is unlike any found in California.

IN WHAT WAY IS THE SITUATION OF CALIFORNIA FAVORABLE TO GETTING PRODUCTS FROM OTHER LANDS?

California has a long shore line upon the Pacific Ocean. Boats can bring, by way of the ocean highway, products from every country. We might say that our doors open to all the world. There is room in the great bay of San Francisco for all the boats of the world to anchor safely and unload their cargoes.

WHAT CAN WE LEARN ABOUT OTHER COUNTRIES FROM THE PRODUCTS THEY SEND US?

1. That some of these countries have a climate much like ours: Since each kind of plant does well only in the climate to which it is accustomed we can tell something about the climates of other parts of the world by the products which they send us. There are many fruits and other foods in the markets which cannot be grown in the region in which we live, while there are some that are sent us because they can be produced cheaper in other lands. The orange, lemon, fig and raisin which we



The Malays live upon the tropical islands southeast of Asia. They do not need roads or railroads for they are sea people. Their homes are built by or even over the water and all their journeys are made in boats.

once purchased, tell us that in the distant lands from which they came there must be valleys with the same hot climate as our valleys. We should expect to find these lands by traveling easterly or westerly from California.

2. **That some countries are hotter than ours:** There are other products which we cannot grow in California. From what sort of a climate do they come? Among these are pineapples, bananas, coconuts, spices, cane sugar, etc. We have tried to grow some of these plants in California but we find that the air is too dry for them and the winters are too cool. In California there are valleys that are very hot in summer, but the air is dry, and in winter they are quite cool and frosty. Bananas, for example, grow best in a climate that is hot and wet the whole year. All the products just mentioned require a hot climate and most of them a damp rainy climate. From what we know of our California climate we conclude that these hot moist lands must lie to the south of us.

3. **That some countries are colder than ours:** We find in the markets products from the east, the west and the south. The dealer says he never gets any from the far north. He says farther that he ships to the people living there every kind of fruit and vegetable that we raise. We must conclude, then, that there are lands where it is too cold for food plants to grow. The furs that we wear also tell of cold lands, for it is only in such places that animals need warm thick coats.

**WHAT LEADS US TO BELIEVE THAT THE WORLD IS
VERY LARGE AND CONTAINS MANY COUNTRIES
WHOSE PEOPLE, ANIMALS AND PLANTS ARE UN-
LIKE OURS?**

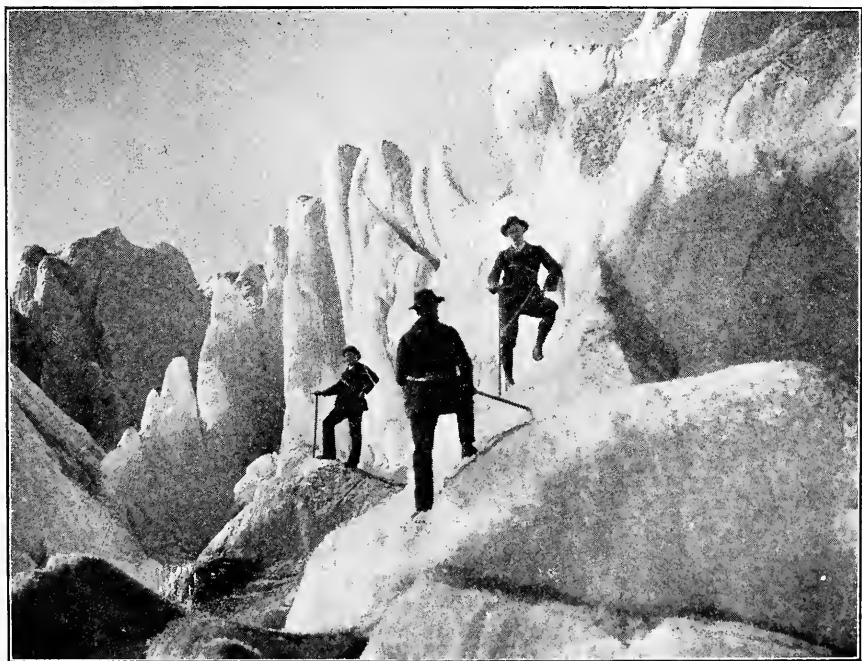
1. **People from these lands have visited us and made their homes among us:** You cannot walk through the streets of any town in our state without meeting people who have come here from some far distant country. We can tell them by their faces, by the unfamiliar language which they speak and by the clothing they wear. If you could visit those parts of San Francisco inhabited largely by foreigners you might hear fifteen or twenty different languages. Some of these people are dark skinned. Some have curly hair. Some have broad cheek bones and slanting eyes. We have all seen the Chinese with their padded garments. The Hindu with his turban, and the Turk with his fez. These strange people come from

various parts of the world. They have heard how comfortably we live in this land and how well people are paid for their work. Most of them will make their home here, although some will go back after a time to their own lands.

There are so many different countries with their different kinds of peoples that the world must be very large to hold them all. Our land must, then, form but a small part of all the land of the earth.

2. From these far lands we receive strange fruits as well as beautiful hand-made articles of every description:

In the markets we find strange fruits and other food products which are not grown in California. In the curio shops and museums there are beautiful cloths, laces, pottery, delicate porcelains, copper ornaments and wood carvings. These things were all patiently made by hand. They come from countries where people work for very little and do not have the comforts we enjoy.



A country that is much colder than ours and covered with snow and ice. Daring explorers climb the glacier-covered mountains for the purpose of making geographical discoveries.

3. Strange animals and birds from these countries are kept in menageries and zoological gardens:

We never miss a chance to see the animals that travel around with the circus. They are always interesting because they are so different from any that are found in our country. There are all sorts from the elephant, camel, giraffe and lion down to the little monkey. Many of these animals are hard to get and need great care. We must give them the food to which they were accustomed when they roamed wild. We must protect them as far as we can from our climate, which is very different from the climate in the lands from which they were taken. How large the world must be to hold so many different animals.

4. It takes many years for travelers to go through all these countries and see the strange sights:

Those who take journeys through all the different coun-



This is a banana grove in Central America, one of the countries that is warmer and wetter than ours. The bananas are going to be shipped to some northern land, where it is too cool for them to grow, possibly to California.

tries of the world must travel for years. The people they meet in one country are different from the people of every other country. They speak a different language, dress differently, have different houses, eat different food and have different domestic animals.

If you could visit a great museum you would get some idea of the people of various countries of the world without having to visit them. In museums we find their clothing, their utensils, miniature houses and many other things that tell us about their lives.

THOUGH YOU MAY NEVER TRAVEL FAR OVER THE GREAT WORLD YOU CAN LEARN MUCH ABOUT THE VARIOUS COUNTRIES AND THEIR PEOPLE FROM YOUR OWN HOME.

1. **People clothe themselves to suit the climate in which they live:** We change our clothing to suit the season of the year. During the very warm weather we wear light thin materials, usually made of cotton. When the cold weather comes we put on heavier woolen clothing. We wear thick shoes and furs about our necks.

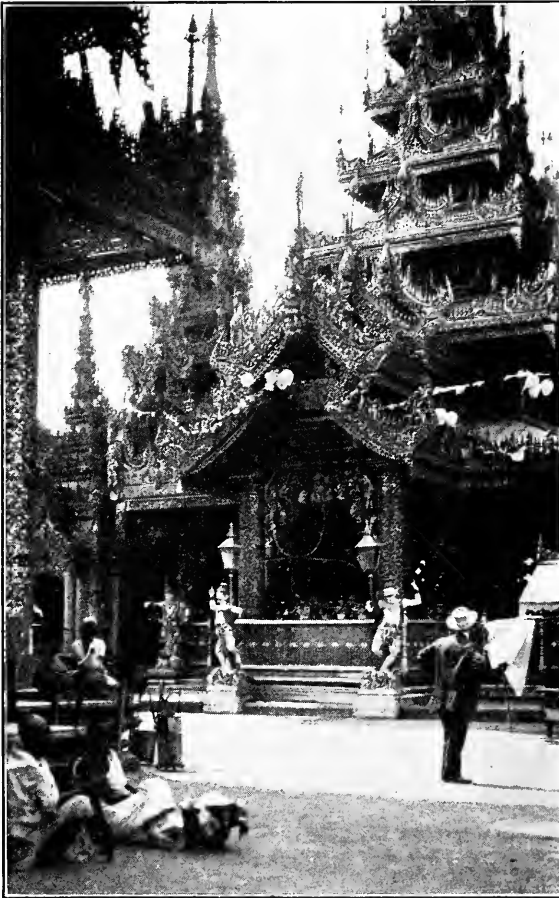
People in other parts of the world who live in a climate such as ours wear similar materials if they can get them. Those who live where it is very cold dress entirely in furs, for these offer the best protection. Those who live in hot lands where the sun at mid-day stands nearly or quite overhead go almost naked.

2. **The materials of our clothing also depend upon what is at hand:** In the far north the natives wear fur clothing not only because it is warm but also because it is the most convenient material at hand. The natives of hot lands make their simple clothing out of the fibre of plants that grow about them. Those whose chief support is flocks and herds, and who do not cultivate the soil make their garments out of wool taken from the sheep, goats and camels. Those who live where cotton grows depend largely upon this material. Those who grow silk worms make a great deal of use of cloth woven of silk.

3. **People build their homes out of materials easiest to get:** You will not have to travel far in California to find homes made out of many different kinds of materials. The old Spanish houses in California are made of adobe or stone. The rafters, of hewn beams, support a roof of red tiles. There was

more timber then in our state than there is now, but it could not be easily reached.

In the more remote parts of the mountains homes are made of logs and roofed with bark or split lumber called "shakes."



One of the strange sights in a country on the other side of the world. This is the Golden Pagoda at Rangoon, Burma. It is made of most wonderfully carved wood and is full of idols.

In most places, however, our homes are now made of sawed lumber, because this is the material cheapest and easiest to obtain. The larger buildings in the cities are made of either brick, stone or concrete and strengthened with iron rods. In one of our deserts there is a cabin made of blocks of rock salt.

These things lead us to expect to find homes made of different kinds of materials in different parts of the world. Some wild people still live in caves; others in trees where they are safer from their enemies than upon the ground. Some make their homes

of frameworks of sticks covered with skins or palm leaves. In countries where people constantly wander about their homes are tents, which can be easily taken down and moved. The Indians live in wigwams, which are formed of poles covered with skins. The Esquimaux live in snow homes.

4. People build homes to suit the climate in which they live: In cold climates homes are made very warm. Where it is hot they are made so that the air can pass freely through them. Where it rains homes are made with sloping roofs to shed the water. In warm dry lands the roofs are flat and people often sleep on them.

5. Tools and household utensils are made of various kinds of materials: In the making of our garden tools iron, steel and brass have been used. In your kitchen are dishes of iron, copper, tin, brass, aluminum, agate ware, wood and porcelain. Here are also baskets woven of different materials. Many of the baskets and dishes have not been made in the region near us but have been obtained in trade with the people of other countries.

Most of our farm tools were once made of wood because long ago iron was much more difficult to get. Now they are nearly all made of iron and steel. In some countries wooden plows are still used.

The people of each country have their own peculiar tools, dishes and household utensils. If metals are hard to get they make their dishes out of baked clay. Among those who have



Would it not be interesting to travel in China and go through such a wonderful gateway as this on your way to visit a temple?

become very skillful in the use of clay are the Chinese and Japanese, who make beautiful porcelain ware. In those countries, where copper and brass can be obtained, wonderfully pleasing dishes are made. These dishes are often carved and inlaid with other metals and precious stones. We prize very highly the finely woven baskets made by the Indians.

The jewelry that the natives of different countries wear is made largely out of the precious stones and metals that they find near their homes. In each country, then, not only the materials but the style of work done is different.



The Laplanders of the far North wear fur clothing made from reindeer hides.

6. The climate determines in part the kind of food that people of different countries eat:

What people eat in different parts of the world depends for the most part on the climate.



The natives of the hot belt wear just as little clothing as possible. It is also very convenient not to have to wear much clothing where it rains almost every day. This woman lives in Southern India where it is fashionable to put all one's money into jewelry.

People that live in those parts of the world that have a climate similar to ours eat much the same food that we do.

7. Facilities for trade determine in part what we eat: We are carrying on trade with all parts of the world. Is it not natural that we should take pleasure in exchanging our products for the strange and often most delicious products of distant lands? Thus we can go to the market and buy many things raised in

Each climate has its own plants, its own fruits, vegetables and grains. Most people eat what grows in the region in which they live.

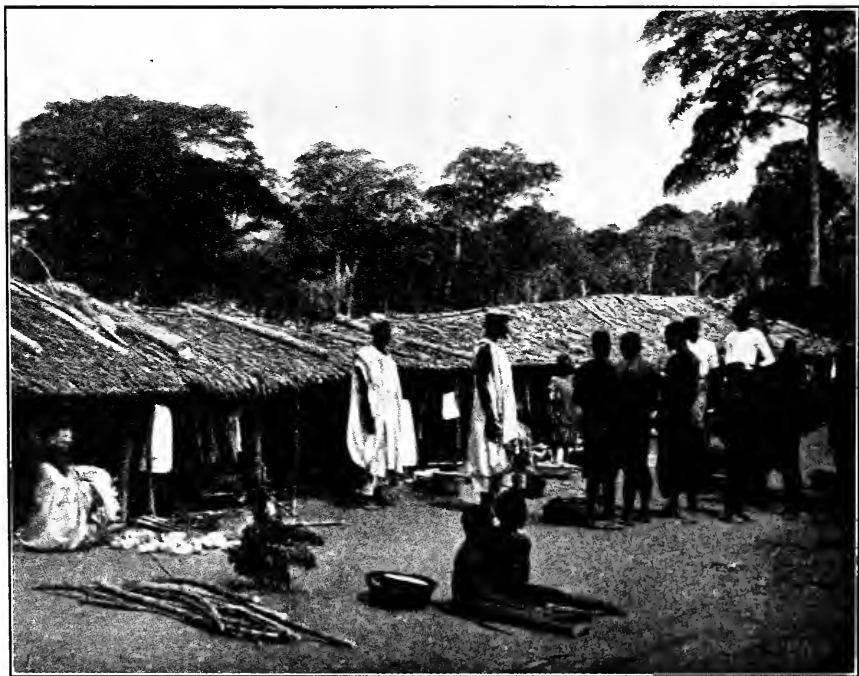
In winter our diet is different from what it is in summer. The natives of the far north eat meat, for this is best suited to their cold climate. In summer they may be able to find berries but there are no fruits or vegetables such as we have. In the hot tropical lands people live largely upon fruits and vegetables. Wild game is used but meat is not needed in a hot climate.

other parts of the world. People who are not civilized and do little trading have to depend on the products that grow about them.

If it were not for the easy railroad and boat transportation between Los Angeles and San Francisco the people of the former place would have upon their tables every day fruits that the people of San Francisco would consider great luxuries. If it were not for the railroads fish, so commonly eaten by people on the coast, would be rarely seen upon the tables of the interior.

8. People living near a coast have a milder climate than those living in the interior:

Have you not discovered that during the summer it is much hotter in the valleys that lie far away from the ocean than it is near the shore? People living in the interior go to the coast, where it is not so hot, for their vacation. People



This is a negro village in Africa south of the Sahara Desert. The most of the inhabitants are almost naked but several wear white robes which they have obtained through trading with the Arabs. They cannot stand upright in their huts but have to sit.

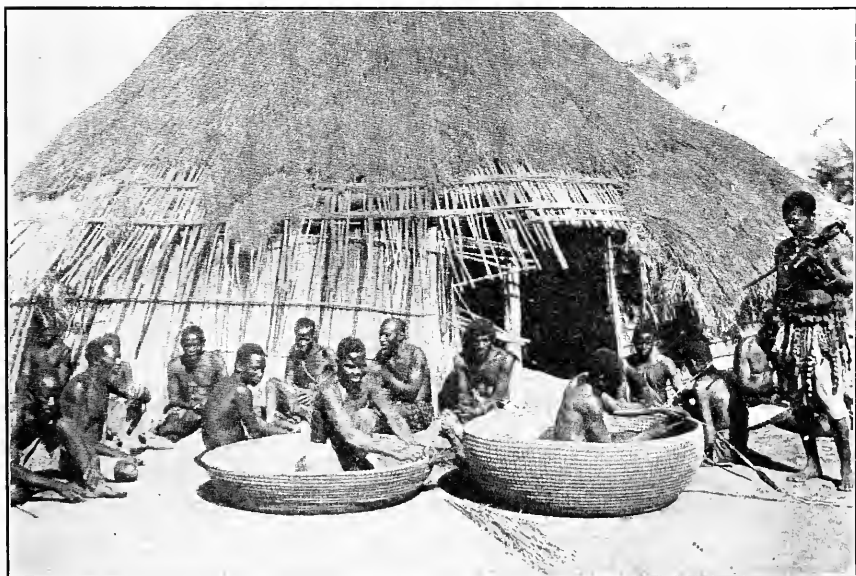
living upon the coast go to the interior for their vacations for the sake of the dry hot air. Upon the coast the climate is mild throughout the year. In the interior it is hot during the summer and cold during the winter.

Wherever you travel over the great world you will find that the oceans make the climate of those lands bordering them milder than the climate of the adjoining interior lands.

9. Mountains are colder than valleys and more rain or snow falls upon them:

Have you not seen the mountains capped with snow after a winter storm while rain fell about your home in the valley? Sometimes you can see the clouds gather about the mountains and rain or snow fall from them while the sun continues to shine in the valley. Sometimes the stream which flows past your home becomes a muddy torrent, telling you how heavily it must have stormed in the mountains where it rises.

From what you have seen about your home you may be sure that the mountains of other lands are cold and that they also form the home of the storms, while the valleys beneath are warm and bright.



These negroes of South Africa live in an interesting hut thatched with grass. They are weaving huge baskets in which to store grain.

10. People cannot raise the same things on the mountains that they can in the valleys:

Each fruit or vegetable does best, as we have already learned, in its own climate. It may live in another climate but it will have a hard struggle. And now, since mountains are colder and wetter than valleys, we should expect to find the people living in them growing different products from those living in the valleys.

If your California home is in a valley you will find on going into the mountains that many of the things growing there will be quite unlike those with which you are acquainted. If your home is among the mountains and you go into the valleys at their foot you will find yourself among different plants.

Wherever you travel over the world you will find these things to be true. If you visit the very hot lands of the south where the sun shines fiercely down upon the earth and then climb one of the lofty mountains there, you will see a most wonderful change in the plants as you go upward.



People in Western Europe who live in the same belt as ourselves dress in much the same manner and engage in the same sorts of work.
This old lady of Brittany, Western France, is spinning just as our grandmothers used to do.

11. The occupations of mountain people are different from those of valley people:

If you live in one of the valleys of California you know that the chief occupation is farming. With the exception of those who carry on business in the towns every one is engaged in growing something.

Only a few of the people of the mountains are farmers. Many are engaged in mining. Others are cutting down trees and turning them into lumber. Some pasture cattle on the rocky slopes, for in the valleys land is too valuable to be used as a stock range. Wherever you may travel over the earth you will find mountain people engaged in many different occupations most of which are unlike those of valley people.

12. Forests grow where the rainfall is heavy and it is not too cold:

We have learned that in most of the valleys of our state there is not enough rain to make dense forests. As we climb the mountains we find that it rains more and we soon reach a



The climate of Greece is much like that of California. This road-side scene shows great olive trees.. In order to use this rocky slope for trees the natives have spent an enormous amount of time in building terraces with the aid of rock walls.

point where there is enough for forests to grow. We may wander for miles through the mountains and be in dense forests all the time except where it is too rocky for trees to obtain a foothold. If we continue upwards to the summits of the higher mountains we reach a region where the trees disappear because it is so cold.

If you should travel to the far north you would, just as in climbing the mountains, come to a land where the cold is too severe for trees to live. If you should travel to the hot lands far to the south where much rain falls you would find the forest jungles are so dense that you would have to cut your way through them.

Many parts of the earth have a climate much like that of California. Where there are no mountains the whole land may be treeless as are the great valleys of our state in which many of our homes are situated. But if there are mountains rising from the treeless valleys you will find them covered with forests as they are in California.

If, after studying the region in which we live, we travel far over the world we can, because of this knowledge of our home, tell where to look for forests and where not to expect them.

13. The dry places, or deserts, have their own plants and animals:

Do not think of our California deserts as sandy wastes without life for that would not be true. If no rain fell in the deserts, then, of course, nothing could live there, but all our deserts get some rain. The plants and animals that have taken up their homes in the desert have changed their appearance and way of living. For this reason the life of the desert seems very strange and wonderful. The plants are armed against animals and animals are armed against one another, some with thorns and some with poison.

In whatever part of the world we find deserts like our own California deserts there we find unusual plants and animals.

HOW DO WE KNOW THAT THE EARTH IS NOT FLAT AS AT FIRST VIEW IT APPEARS TO BE?

1. We can see more of the earth from the top of a hill or mountain:

If we want to get a good view we climb to some high

point. If there is no hill at hand the top of a tall building will answer very well. The strange thing about this view is, however, that we can see farther over the surrounding country than we can from a lower level.

From the top of a tall building in the San Joaquin valley where the land stretches away for many miles almost as level as the ocean many things come into view which are not visible from the floor of the valley. If you turn now to the sea and climb to the top of a high bluff ships which had disappeared as you stood on the beach will again come into view. Sailing vessels of which only the tops were visible from near the water will from the bluff show their full outlines.

The only way in which we can explain this curious thing is that the earth on which we live is not flat but that it curves as does the surface of a ball.

2. If the world were flat and you traveled away from home in a straight line you would never come back again:

If you started out from home and traveled a crooked road you might sometime get back home again no matter what the shape of the world were. But if the world were flat and you traveled away from home in a straight line you would always be getting farther away. You would never reach home again. You can understand how this would be by taking a sheet of paper and after laying it out flat draw a straight line through a point which you might call home. The farther you moved along the line the farther you would be from home.

3. People have often journeyed away from home in one direction and after a time have come back from the opposite direction:

Taking the sheet of paper on which you have drawn the straight line roll it up in such a way that the line will run around it. The line that was straight is now curved in the form of a circle so that the two ends meet. If you now travel away from home upon this line and keep going in the same direction you will finally come home from the opposite direction. If you imagine that this line starts eastward from your home and you follow it far enough you will come home from the west.

We must not think, however, that the earth is like this cylinder of paper for it makes no difference what direction you start out if you keep going straight ahead you will at last come back from the opposite direction.

We must conclude, then, that the earth is curved in every direction. These journeys do not prove that the earth is exactly round like a ball, for if it were shaped like an egg you could travel around it just the same. But it *is* true that the earth is shaped almost exactly like a ball. By and by you will learn how it is that we know the earth is a ball.

HOW DOES THE BEHAVIOR OF THE SUN TEACH US THAT THE EARTH IS ROUND?

As we go north or south the sun seems to change its position in the sky. Find your California home upon a large globe. Now place something to represent the sun in such a position that it will shine on your home from the same direction as the real sun shines on our real homes. Each day as you travel north upon the globe the sun will appear lower in the sky until it finally disappears.

Now if you start south from home the sun will become higher until it stands overhead. If you continue the sun will finally be at your back and become lower day by day until it is no longer to be seen during any part of the day. These journeys prove that the earth is not flat but has a curved surface.

THE SUN AND STARS TEACH US THAT THE EARTH MOVES.

It was once thought that the earth stood still and that the sun went around it. People did not understand that if the earth were flat and extended away without any end that the sun could not go around it. Now that we know the earth is round like a ball we can easily understand how the sun appears to rise and set as the earth ball turns around. If you will watch the stars some night you will see that they also rise, move across the sky and set in the same way that the sun does.

The length of time that it takes the earth to turn completely around we call a day. We have divided the day into twenty-four hours, and the hours into minutes and seconds. It is always day on the half of the earth next the sun and night on the other half.

2. What do we mean by the axis of the earth? An orange with a needle stuck through it will aid us in understanding what we mean by the axis of the earth. The earth turns just as the orange does around the needle but the earth has no real axis. We must think of it merely as a line. The points

where the imaginary axis or line comes out to the surface we call the *poles*. One we call the *north pole* because it points towards the north; the other we call the *south pole* and it points toward the south. Men struggled for years to reach the poles, but since they lie in regions of perpetual cold and ice it was a long time before they succeeded.

3. If the earth did not journey around the sun there would be no winter and summer:

When the days are short and the sun rises only a little more than half way up the sky we get the least heat from it and we say that *winter* has come. When the sun rises highest in the sky and the days are long and hot we say it is *summer*. The time from the middle of one winter to the middle of another we call a *year*. There are three hundred and sixty-five days in a year.

Now why is it that the sun appears to change its path in the sky as summer gives place to winter and winter to summer? If the earth as it turns around stood upright on its path as does the top as it spins there would be no summer or winter. But as it happens the axis on which the earth turns or spins is inclined. And since the axis points in the same direction during the whole year you can readily see by carrying a globe around an imaginary sun why it is that the position of the sun seems to change. This explains why the sun is low in the sky at noon of a winter day and high at noon of a summer day.

THE MOON GOES AROUND THE EARTH.

While it takes the earth a year to go around the sun the moon goes around our earth in a little less than one of our months. If there were people on the moon their year would be very short. The moon's days are, however, very long, since the "Man in the Moon" always turns his face toward us. How hot the moon's long days must become, and how cold the long nights. People made as we are could not live on the moon, for during the day they would almost burn up, while at night everything must be frozen.

THE SUN HAS A GREAT DEAL TO DO WITH THE CLIMATE WE ENJOY.

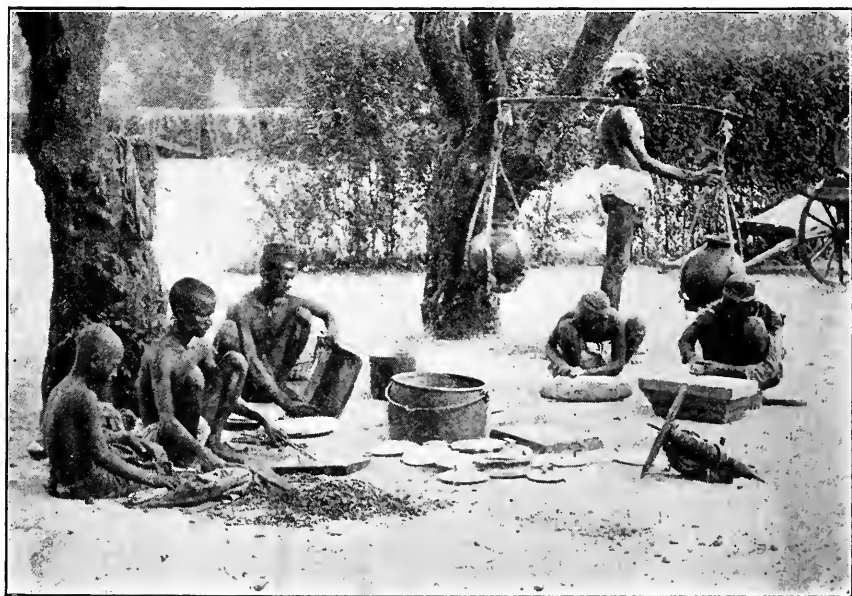
1. How does the position of the sun and the climate change as we go north or south?

Each succeeding day as we journey northward the sun

appears lower in the sky at noon. The air becomes colder. The plants become more scanty. Finally we reach the north pole where the north star appears overhead, and, upon the 21st of September and the 22nd of March, when the days and nights are of equal length over the earth, to the south of us, the sun just peeks over the horizon. Ice and snow lie everywhere and there is no living thing in sight besides ourselves.

From home we now journey southward. The sun rises higher. The air becomes more sultry. Finally the sun is directly overhead at noon. Because of the heat and moisture the earth is covered with such a dense forest jungle that we can scarcely move about without cutting a path through it. Here in the hot belt it is always summer.

2. How does the sun appear as we journey east or west? The people north of us get less warm sunshine; the people south of us get more. If now we travel east or west what can we learn about the sun? We discover that the sun rises in the same position that it does at home, and that it climbs to the same height in the sky.



In the warm lands of the south the natives do not worry much about clothing or how they eat. This is a wayside restaurant where chairs and table are not needed. Notice the water-carrier in the background.

Some places that we come to are warmer than our home and some are colder, but this difference is not due to the sun. We know that some days of summer are very cool at home if the wind blows off the cool ocean, and that some days are very hot if the wind blows from the land. Thus when journeying east or west around the world we find that the sun behaves just as it does at home. If we find it very cold or very hot in any place it is because of other things than the position of the sun.

WE LEARN FROM OUR CALIFORNIA HOME THAT THE SUN IS NOT THE ONLY THING THAT DETERMINES THE CLIMATE IN WHICH PEOPLE LIVE.

1. By climbing to the summits of our high mountains we find a climate as cold as in the far north:

Did you ever think that here in California there are places as cold as those which we would finally reach if we traveled for weeks toward the north? Wherever in our journeys we have traveled over mountains we have found the climate much colder than in the valleys at their base. We see orange blossoms in our own California valleys in the middle of winter



In North Germany it is colder and wetter than in California because it is farther north. Note the roof thatched with straw and the strange caps worn by the women. The people of each country have their own national costume.

while the mountain tops above these valleys are white with snow. As we stand in the ice and snow among the rocks of the mountain tops it is easy to believe if it were not for the position of the sun that we are in the arctic regions of the far north.

2. Journeying eastward in summer we come to valleys as hot as those along the equator under the vertical sun:

We all know how cool the climate is along our California coast. If we become tired of the fog and chill we do not have to go southward in order to find a warm place. Our journeys have shown that it does grow hotter toward the south, but we can find as hot a place as we wish even in California. All we have to do is to leave the coast and travel eastward to the far inland valleys. By the time we have passed the Sierra Nevada Mountains we are in valleys where the heat is almost unbearable. The air seems like the breath out of an oven. The sun rises no higher in the sky than it did on the coast but the mountains stop the cool winds that blow from the ocean and the sun has everything its own way.

3. By journeying eastward in winter we come to lands much colder than are our California valleys:

If we leave our homes upon a winter day when roses are blooming in the gardens and travel eastward toward New York we shall soon get into a land where it is so cold that we must put on the thickest clothing. The air is sharp with frost and unless we are careful we shall freeze our noses and ears. The days are no shorter than they are at home, neither is the sun any lower in the sky. What is the reason, then, for this great cold?

If we trace our journey upon a map of North America we shall find that the cold was greatest where we were farthest from the ocean. The winds that blow past our homes in California come from the ocean, which does not cool in the winter as does the land. For this reason the winters at home are mild while those far in the interior of the continent where the mild winds do not reach become very cold.

WHAT, NOW, ARE THE MOST IMPORTANT THINGS THAT WE HAVE LEARNED FROM OUR JOURNEYS?

1. That belts of sunshine run around the earth in an east and west direction:

If we start from a home here in California and go east

or west the days will continue to be of the same length. The sun will appear to rise in the same direction, reach the same height in the sky at noon and set in the same direction. If people who live to the north or south of us journey east or west they will also find the days and nights the same length as those of their homes, but these days and nights will be different from ours.

2. Belts of heat and cold run around the earth in an easterly and westerly direction but are very crooked:

The belts of sunshine run east and west and we may think that the belts of heat and cold ought to do the same, but they do not. We have learned that the ocean warms the air that blows across it in winter and cools it in summer. We have learned that the air becomes very cold where it rises to pass over mountains. We have learned that in the valleys which are shut away from the ocean by mountains the air becomes very hot in summer. We have learned that lands lying very far from the ocean are hot in summer and cold in winter. These things keep the belts of heat and cold from following the sun and make them very crooked. If you wished to travel from San Francisco to New York and follow a belt in which the temperature was the same all the way you would have to



Winter is the best time to travel in the far north for then the dogs can drag the sled easily over the rivers and lakes as well as the land.
In summer the lowlands are wet and marshy.

take a very crooked route. If you did not care about the temperature but wished the same amount of sunlight your journey would follow a due east course.

3. **That far north of California is the cold Arctic belt:** If we travel north from California in winter until the sun no longer rises above the horizon we reach the edge of the *Arctic belt*. During the winter it is night most of the time. No living thing is to be seen. The cold is very great.

The short warm summer finally comes. The days become very long and for some weeks the sun does not set. The "Midnight Sun" is a wonderful sight. Tiny plants spring up. Birds come from the south to nest. The air, the water and the land seem full of life.

The Esquimaux who live in the cold belt have a hard struggle to get food and clothing and to keep from freezing to death in the long dark winter.

4. **That south of California is the hot or tropical belt where it is summer all the time:**

South of us is a belt where it never grows cold and where the sun always stands almost or quite overhead in the middle of the day. It is so hot in this belt and there is so much moisture in the air that we are quite uncomfortable. People from the cold belt find it difficult to live here and keep their health.

The dense forests are alive with birds of brilliant plumage. Snakes and poisonous insects hide in the underbrush and the water swarms with living things. In the hot belt people do not have to work much for Nature grows many sorts of fruits and vegetables with little care from men.

5. **That California lies between the very cold and the very hot belts:**

We have learned of the cold belt north of us where in the winter the sun does not shine for months. We have learned of the belt south of us where the sun stands overhead at noon throughout the year. California lies between the very hot and the very cold belts. Although parts of California are very warm and other parts very cold, yet the greater part has a medium temperature. Hence we say that California lies in the *temperate* belt. The people that live in the temperate belt can do the most work; they have the most agreeable climate, the greatest variety of food and the most comfortable homes.

6. That each belt has its own animals and plants: In the warmer part of the cold belt there are vast numbers of fur-bearing animals and forests of pine and fir. In the warmer parts of the temperate belt the forests consist mostly of trees that shed their leaves in winter, such as the oak, maple and the nut-bearing trees. In the hot belt are palms, giant ferns and valuable hardwoods. In the hot belt we find many great animals, such as the lion, elephant, giraffe, camel, etc.

7. That the natives of each belt differ in dress, food and habits: Our ancestors were natives of the temperate belt. They as well as most of the other inhabitants of the temperate and cold belts are light skinned. The natives of the hot belt are darker skinned and some are almost black.

The people of the white race are most highly civilized. They are very energetic. They have made many inventions and have carried on trade with all parts of the world. They have gone to the coldest parts of the earth to mine gold, they have gone to the tropics to raise pineapples, coffee, bananas, and to get rubber. They have gone into the swamps and deserts for the treasures they contain.

Into whatever belt the people of the white race go they must live in that belt as the natives do. In the far north their



The elephant's home is in the hot belt. The people there train them to work and it is remarkable what they can be taught to do. These elephants are piling teak logs in Rangoon, Burma.

diet must be largely meat. In the hot south they must eat mostly fruit and vegetables. Wherever we go we must adapt ourselves to the climate and other demands of that place if we would be happy and comfortable.

8. That our California home has within it nearly all the different climates of the world:

California is a wonderful state. The relief model has told us that it is made up of mountains and valleys. We know from what we have seen of different places that some are very hot and some very cold. We know that a great deal of rain falls in the north and very little in the valleys of the south. We know that the winds generally blow from the ocean but that they often come from other directions. The ocean winds are cool and moist. The land winds are dry, being cold in winter and hot in summer.

In hunting for a home we can find in California any sort of a place that we wish. Our California home is almost a little world in itself. If it were necessary we could get along without the products of any outside people. But I am sure we will all say that it is much better to have all the dealings we can with the people around us. In the interchange of prod-



Sheep are found all the way around the world in the belt we live in (temperate belt). This is an English farm scene showing the thatched buildings.

ucts we have an opportunity to learn about them and to obtain anything good that they have.

WHAT ADVANTAGES HAS OUR STATE FOR TRADING WITH OTHER COUNTRIES?

Find California upon the globe and you will see that it lies upon the Pacific, the greatest of all the oceans. All about the borders of this ocean are many countries, the most of which do not grow the same things that we do. By sailing southeast or southwest from San Francisco you will see from the globe that vessels can leave the Pacific, and by means of other oceans reach all the lands of the earth. California has, then, the whole earth for a market. A boat sailing from California can take our products very cheaply to any one who wants them. The ships can bring back the natural products and beautiful articles of hand manufacture of distant peoples. We might say that the front door of California opens on all the world.

MOUNTAIN AND DESERT BARRIERS ONCE SEPARATED CALIFORNIA FROM THE EASTERN STATES.

As we study the globe the eastern part of our country does not seem so very far away. Yet California was once more difficult to reach from New York than India is now. Find India in southern Asia and show that this is true.

People once thought it would be impossible ever to build a railroad across the rugged mountains and hot dry deserts. Now there are five railroads making the journey to the East short and comfortable. The thousands of carloads of fruit sent to the great eastern markets are bringing prosperity to the people of California.

A VERY LONG SEA VOYAGE WAS ONCE NEEDED TO REACH OUR STATE FROM THE EAST.

Before the railroads were built all the supplies needed in California came by water. As the most of these supplies were produced near the Atlantic coast of our country a long ocean voyage was necessary. Trace the journey on the globe and you will see that it is equal to about two-thirds of the distance around the world. Most of the ships making the voyage were sailing vessels. They had to pass through belts of calms in the tropics, through belts where gentle winds, called the *trade winds*, blew every day, and regions of almost constant storms.

You will see from the globe that the direction sailed from New York was southerly across the hot belt, then through the *south temperate belt* until the southern point of South America was reached. Many boats were wrecked in rounding stormy Cape Horn. From here they turned north and then northwest, crossing the hot belt again, and finally reaching San Francisco in the north temperate belt. The voyage often took six months. It was possible to ship only such foods as would stand the long exposure. In those days there were no refrigerators.

THE PANAMA CANAL IS OF VERY GREAT VALUE TO CALIFORNIA.

The globe tells us that the voyage from New York to San Francisco by the Panama Canal is only about one-third of the distance around Cape Horn. Although to reach the Panama Canal we have to go into the hot belt, yet we escape the dangerous storms met in rounding South America.

The canal does not interfere with the usefulness of the railroads. Most people and all perishable freight go by the railroads. We send by the canal cheap heavy articles for which we are in no hurry. We use the canal also for fruit and grain which are going to Europe.

HOW IS IT THAT NEARLY ALL OUR FOREIGN TRADE IS CARRIED ON THROUGH SAN FRANCISCO?

1. The harbor of San Francisco is the best of any upon the Coast of California:

Where can we find a better harbor than that of San Francisco? It has a narrow entrance which protects it from ocean storms. The water is deep enough for the largest boats. There is room for the ships of the whole world. There are many miles of shore along which wharves, warehouses and factories can be built.

2. San Francisco is at the outlet of a river basin which includes about half of California:

Trace upon a map of California the boundary of all the land that slopes toward San Francisco Bay. If you had a store anywhere within this area and wished to buy goods do you not think that San Francisco would be the best place to go for them? If you had grain and canned or dried fruit to ship abroad would not San Francisco be the best place to send them?

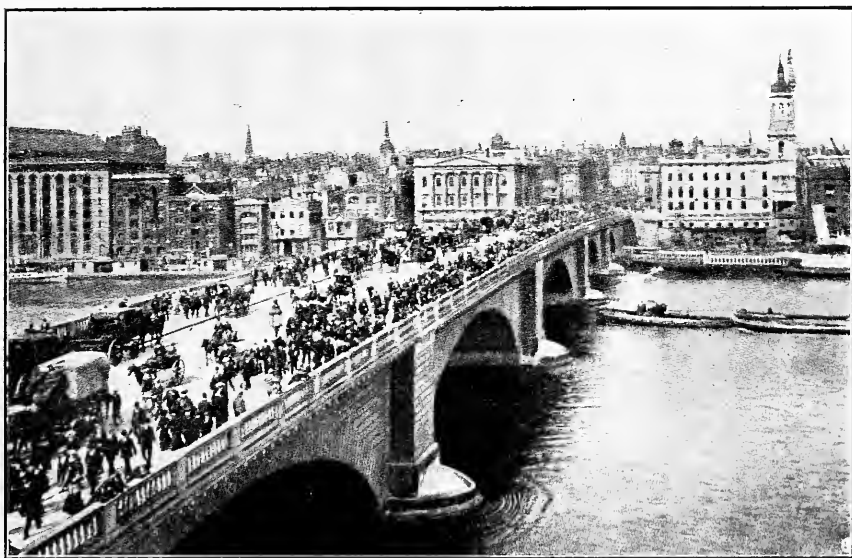
3. Railroads connect San Francisco with all parts of the United States:

The people that live about the shores of the Pacific Ocean need many of our products, one of the most important of which is cotton. Railroads connect San Francisco with the great cotton growing districts of the Southern States as well as with other portions of our country. Whatever we have to sell is collected at San Francisco, from which it is distributed by boat to distant lands.

TRACE THE WATER ROUTES UPON THE GLOBE BY WHICH WE COULD SHIP WHEAT TO ENGLAND BEFORE THE BUILDING OF ANY CANALS.

We might sail southwesterly across the Pacific Ocean, passing north of Australia, through the Indian Ocean until rounding Cape of Good Hope at the southern point of Africa we would reach the Atlantic Ocean. Then sailing northwesterly and finally northerly through the Atlantic England would be reached.

We might sail in a direction a little east of south along the eastern border of the Pacific Ocean until passing Cape



The grain ship which we have followed to England will probably go up the Thames River to London. The children play "London Bridge is falling down" but the real London Bridge as you see in this picture is very strong.

Horn at the southern end of South America the Atlantic Ocean would be gained. Then a very long almost straight voyage would bring our wheat-laden ship to England. Which route do you think is the safer? Which do you think is the longer?

TRACE UPON THE GLOBE THE ROUTES BY WHICH WHEAT COULD GO TO ENGLAND AFTER THE DIGGING OF THE SUEZ AND PANAMA CANALS.

Find upon the globe the narrow neck of land connecting Asia and Africa. Across this neck of land, through a sandy desert the Suez Canal was dug connecting the Red Sea with the Mediterranean.

Find upon the globe the neck of land connecting North and South America. At the narrowest point the Panama Canal was dug. This canal was more difficult than the Suez Canal because a line of hills had to be crossed. Deep cuts were made and as they would have had to be too deep for boats to go through at sea level locks were built.

The Suez Canal saves the long voyage around Africa. Thus after crossing the Pacific Ocean and passing the southern points of Asia our boat would continue westerly across the



Street of a village in a coconut grove. This tall palm supplies the natives with almost everything that they need.

northern part of the Indian Ocean to the Red Sea. After passing the Suez Canal its course is still toward the west through the whole length of the Mediterranean sea and the Strait of Gibraltar to the Atlantic Ocean. A short voyage northward and England is reached.

Most boats would probably prefer to take the route by the Panama Canal because it is shorter. Sailing southeasterly from San Francisco along the west coast of North America the canal is reached. Passing through the canal we enter the Caribbean Sea. The ship now turns toward the northeast across this sea and leaving the West India Islands behind has a long straight voyage across the Atlantic Ocean to England.

WHY CAN WE NOT REACH ENGLAND BY SAILING TO THE NORTH OF NORTH AMERICA?

Long ago when our continent was little known the people of Europe sought a more direct route to India and the Isles of the South Seas than that around the south of South America. For years explorers made every effort to sail around North America on the north. But after many had lost their lives in the ice the attempt was given up.



Coral beach and coconut grove on the Island of Ceylon. Some of the nuts may drop into the water and be carried far away to another island.

When thrown up on the beach by the waves the nuts will sprout and form a new grove.

From the map it appears very easy to sail northwest from San Francisco over the Pacific Ocean, through Behring's Sea and into the Arctic Ocean, and then turning easterly among the islands reach the Atlantic Ocean. But whalers that visit this region tell us of the vast frozen ocean to the north of America where it is rarely possible to go with boats even in summer.

SHIPS BRING THE PRODUCTS OF MANY LANDS TO THE WHARVES OF SAN FRANCISCO.

1. **The home of the coconut:** Before us is a pile of coconuts just unloaded from a ship. Their hairy shells do not look at all inviting, but we know that within each there is a cupful of a pleasant tasting milky fluid and a layer of solid white meat which is very good to eat. When shredded and dried it is often used in cake or candy. When treated in another way an oil valuable in soap making is obtained, while what is left is made into meal and fed to cows. Let us follow the coconuts back to their island home in the Pacific Ocean where the sun at noon stands directly overhead and it is summer all the year around.

The tall coconut palms love the lowlands of the tropic islands. They love the hot moist air in which we so very quickly become weary and lose our energy. The palms grow so thickly that some are crowded down to the very edge of the ocean. Many of the nuts drop where the waves reach them and are carried away by the currents. The shell is so tight that the germ within it is not injured by the salt water. Because of this the nuts that by chance are washed up on some distant shore may sprout and take root; in this way most of the islands of the hot belt have become covered with forests of palms.

From the coconut the dark skinned people, who live in these tropical islands, are supplied with something to eat and drink wherever they may journey in their canoes. Sailors wrecked upon the shores where the palm trees grow need not die of thirst or hunger.

So valuable is the coconut palm that the natives of the hot belt could not do without it. Here in our own homes we should greatly miss the coconut and its products. Let us now visit one of the islands of the Pacific and learn more about the palm trees and the people that live among them.

We sail for days toward the south over the blue ocean until the air grows very warm and the sun stands overhead at noon. Finally a dark line appears upon the horizon. This line grows more and more distinct until we are near enough to see that it is a vast forest of palms.

Soon we can see the beach of coral sand and the harbor we are going to enter. The boat moves very slowly until the captain finds the channel through the reef upon which the waves are breaking. This is a coral island built up by the tiny insects that made the beautiful pink coral of the necklaces in the shop windows and the delicate clusters of white stems of many kinds to be seen in museums. All about the islands countless numbers of these little creatures are at work. They leave their coral skeletons behind them as they grow upward toward the surface of the ocean. Thus year by year they make the waters around the island more shallow and dangerous to navigate. It is no wonder that the captain watches the channel carefully for the coral rock could easily tear a hole in the bottom of the ship.

The opening in the reef is finally passed and the boat glides into the quiet water behind it. Now beneath us appear water gardens more wonderful than anything we have ever dreamed of. There are beautiful flower-like corals of every color, there are fish of many colors and shapes, and crabs and shells in an endless variety.

We land and climb up the beach into a forest of palms and soon come to a native village. It contains but one long street over which hang graceful palms. The street is full of dark-skinned almost naked people. They wear as little clothing as possible and are thus far more comfortable than we are. They are not afraid of the sun, and the rain that falls nearly every day runs off their bodies as water does off a duck's back.

The frames of their one-story homes are made of the trunks of the palm. The thatch of the roof is made of palm leaves. The walls are formed of leaves woven into a kind of matting. On the floors are thick mats made of the husks of the coconuts, while the ropes are made of the same material. The hard shell is used as a drinking cup and for many other purposes. Thus we see the coconut palm is a very important tree. The natives count their wealth by the number of coco-

nut trees which they own. Without the coconut palm many of the islands would be uninhabitable.

The business of gathering and shipping coconuts and the dried meat or *copra* in the East Indies and adjoining islands is a very important one. Here in San Francisco we get the fresh coconuts, the dried meat from which a valuable oil is obtained and door mats made of the husks.

2. **Where does olive oil come from?** Olive oil is made in California you say. That is very true, but not all the oil that we use is made here. Before us are two cases of oil that have just been unloaded from a freight car. Each of these is marked in a different foreign language. Let us discover if we can from what lands the oil was shipped.

The olive is not a native of California but was brought from a distant land across the ocean. We have already learned that each kind of plant thrives only in the climate to which it is accustomed. We have also learned that there are belts of climate that extend around the earth in an easterly and westerly direction. Because of these things we conclude that to find the old home of the olive tree we must go neither to



In Spain it is easier to get goat's milk than it is cow's milk. This man drives his flock of goats through the streets and milks at each door the amount wanted.

the north north nor to the south but in an easterly or westerly direction.

Crossing the United States on the cars we take a steamer from New York and sail easterly across the Atlantic Ocean. The first land we reach is a large peninsula forming the southwestern portion of Europe. This is the country of Spain from which came one of the cases of olive oil.

How familiar the name Spain sounds. Our history stories tell of the Spanish Padres who first explored the region where we live and called it California. From their home in Spain the Padres brought the semi-tropic fruits that now make California so famous. Among these fruits were the olive, orange, lemon, fig and grape.

We will land at Gibraltar, beneath a great rock that guards the entrance to the Mediterranean Sea. Traveling inland we come upon the familiar sight of orange groves. We pass through forests of cork oak from the bark of which is made the cork for our bottles. There are piles of bark sufficient to load a ship.

The farther we go the more hilly the land becomes and

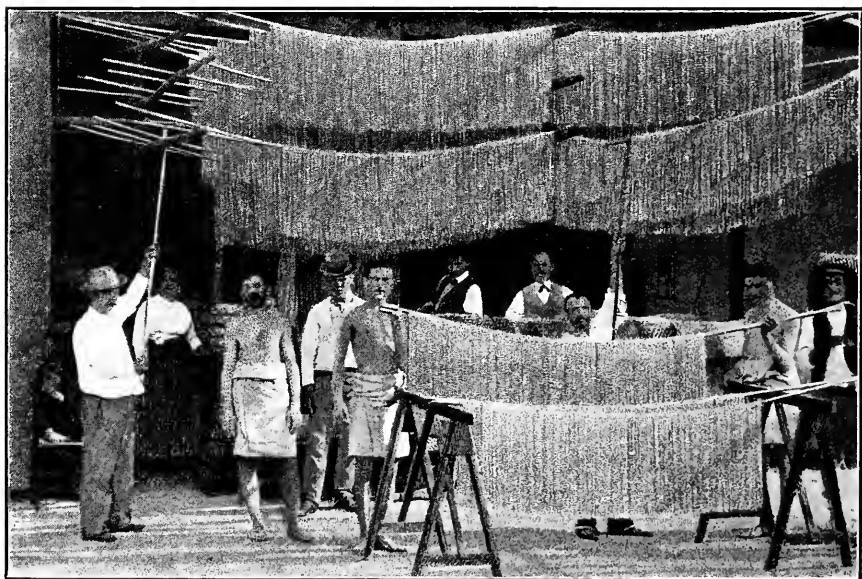


This is a Spanish peasant and his family just in from the country for supplies. The donkey does all the hard work in Spain and often does not get enough to eat.

we soon reach the home of the olive for which we are seeking. Here are vast orchards covering the slopes as far as we can see. Reaching the mountains we find a climate too cool for the olive. Behind the mountains there are dry valleys and plateaus like those we are familiar with in parts of our California home where the weather is dry and cool.

Although the climate and products of Spain are very much like California the people are different. They dress differently and live differently. The people in this land so like ours should be happy and prosperous, but alas from what we can see they appear to be very poor.

The land has been cultivated so carelessly for hundreds of years that now it produces very light crops, and it is all that the farmers can do to make a bare living. Nearly all the forest trees that once covered the country have been cut down and none have been set out in their places. The water now runs rapidly off the slopes, carrying the best of the soil with it. The fuel is so scarce that none can be used in stove or fireplace. Although the winter nights are cold in the highlands of Spain all the fuel the people can afford to buy is a little charcoal with which to do their cooking. Such is a



When we go to Italy we are sure to get all the macaroni we want. This is a shop where it is being made and hung up to dry.

picture of the country from which we obtained our most valuable fruits.

We will now return to the steamer and continue our journey toward the land from which the other case of olive oil came. Passing through the Strait of Gibraltar the steamer enters the Mediterranean Sea and holds an easterly course until a mountainous land rises ahead. This is a long narrow peninsula extending into the sea. You can easily find this upon the globe because it has the shape of a boot.

This land is known as "Sunny Italy" because of its pleasant climate. We know what this name means because our own California is sometimes called "The Land of Sunshine." Since the climate is like that of our own we are not surprised at the sight of groves of orange and lemon trees.

Which ever way we turn, olive trees are to be seen and it is no wonder that the Italians, although they use olive oil in much of their food, have, in addition, large quantities left to sell to people of other lands.



The happy children of Sunny Italy out for a holiday ride. The gaily decorated cart and horse is such as we see in Palermo on the island of Sicily.

The forests here have been destroyed as they have been in Spain and the country is the poorer for this waste. One of the most abundant trees still remaining is the chestnut, for the Italian is very fond of the nuts. The cutting down of the trees has led to the washing of so much soil from the mountain slopes that many of the bays where long ago ships used to anchor are now green meadows where cattle graze.

Italy is so filled with people that it is difficult for them all to make a living and that is one reason why so many of them have come to our country.

3. **A Ship from India:** What can this ship from India be loaded with? We picture in our minds all sorts of beautiful things made in that far away mysterious land which forms one of the southern tips of Asia.

But how disappointed we are upon discovering that instead of silks, precious stones, jewels, copper vases and rugs the ship carries merely jute and tea. What common looking material this jute is when woven into what we ordinarily call burlap or sacking. But to the farmer who needs bags for his



A wayside shop in India. Mats woven of palm leaves protect from sun and rain. The people do not know what chairs are but squat on the ground to rest.

barley, wheat or beans the coming of a ship loaded with jute is an important thing.

Jute is made of the fibre of tropical plants that grow in India. Jute and tea form the two most important articles that we import from that country. We must not think, however, that these are the only important products of India. There are others that we shall have to journey to that distant land to find out about. In the shops of India we shall find the beautiful things of which we have dreamed. We shall see the great temples and tombs. We shall see the car of the idol Juggernaut with its huge wheels in front of which the natives used to throw themselves during religious festivals.

India is a great land containing more than three times the number of people that our own country does. It is very hot in summer except in the far northern part where rise the Hima-



This is an Irish home. The walls of the house are made of plastered stone while the roof is covered with straw thatch and built steep to shed the rain. It rains so much in Ireland that the country is always green and for that reason it has been called the "Emerald Isle."

layas, the highest mountains in the world, whose summits are always white with snow.

Since the products of India which reach our shores are not as interesting as the people, let us try to learn what we can about them. To see the poor Hindus wandering through the streets of our towns or trying to handle a pick and shovel we would not think that they amounted to much as workers in their Indian home. We shall see, however, that they have done many wonderful things.

There are so many people in India that some of them never get enough to eat and during famines thousands starve. Their religion tells them that it is wicked to kill anything and so they do not eat meat. This is perhaps one of the reasons why the Hindus appear so frail and spindling and are of little value as laborers.

The sights in an Indian city are strange and interesting. The poorer people are scantily dressed, but such clothing as they have is usually brightly colored. The little children are almost naked. How pretty a crowded street looks with the many bright costumes. Each street has its own particular business. One is devoted to making of copper dishes. Another is given up to the silk merchants. A third is occupied



The water buffalo is employed in India to do all the kinds of work for which we use the horse. The wooden cart upon which the Hindu driver is sitting looks very clumsy but will carry a heavy load.

by the grain market. People pass by loaded with all sorts of goods. Here is a man with a huge brass dish on his head. There a woman is carrying a load of water jars to sell in the market. Now a number of men go by with jars of water suspended from a pole over their shoulders. Yonder two women are turning a hand-mill made of two great stones, and grinding the meal for their supper.

A strange sort of wagon comes along the street drawn by a camel. Next a four-wheeled wagon with a canopy appears drawn by two white hump-backed oxen. Inside the curtains are some rich women hidden from the gaze of the people of the streets for they are Mohammedans.

Now a procession of gorgeously decorated elephants comes down the street and everybody makes room for them. A man sits on the head of each animal guiding him with a stick and uttering cries which we do not understand. Behind the driver on the back of the leading elephant sits an Indian



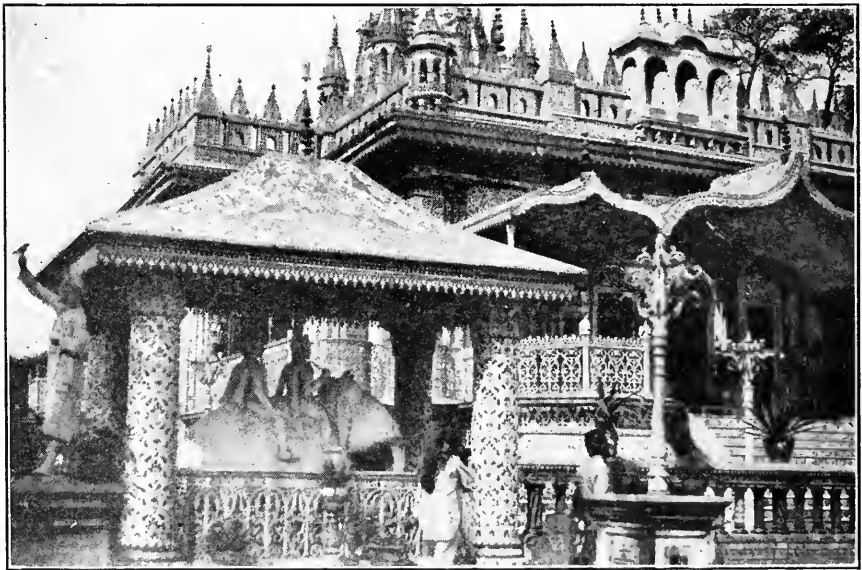
These Egyptians are going home from work in their fields. The men are riding the camels and the women are walking and carrying the loads. Is this the way we do in our country?

prince richly dressed, while his servants follow upon the other elephants.

We will turn now toward one of the many temples and soon even more interesting sights meet our eyes. We come upon holy men, priests and pilgrims from all parts of India. Some are poor and dirty. Others, almost naked, have freshly oiled bodies and strange marks painted upon their foreheads.

Now a sacred cow comes along the street with a wreath of flowers hanging from her horns. She stops to eat at a vegetable stand but the owner dares not drive her away for she is sacred. In fact he feels honored by the visit of the cow. The animal enters the temple door and wanders through the court while more wreaths are thrown over her head.

In the entrance hall of the temple is a hideous idol with candles burning about it, while upon the floor are stains which make us think some animal has been sacrificed there. In the court is a pool of water where the pilgrims bathe. Monkeys chase each other about the roof of the temple and come trooping down when the priest calls. They know that his call means



This is a richly carved Hindu temple in Calcutta, India. Under the little pavilion we see an image of the sacred elephant with figures on its back. Hindu temples are always filled with idols of their different gods.

that some pilgrim has done a good act by purchasing grain for them to eat.

We next go down to the Ganges river where all good pilgrims bathe before returning home. If they die near the



This woman of Java is tapping a rubber tree. The milky sap can be seen gathering at the bottom.

river their bodies are burned and their ashes are thrown into the water. Steps lead down to the water from the different temples in this holy city of Benares so that the people can bathe easily. Here and there under great parasols sit priests who paint the caste marks on the foreheads of the devotees. There is no such wonderful sight to be found elsewhere in all the world.

Now having had a glimpse of an Indian city with its street life, and its temples we will go to our hotel and drink a cup of the famous Ceylon tea.

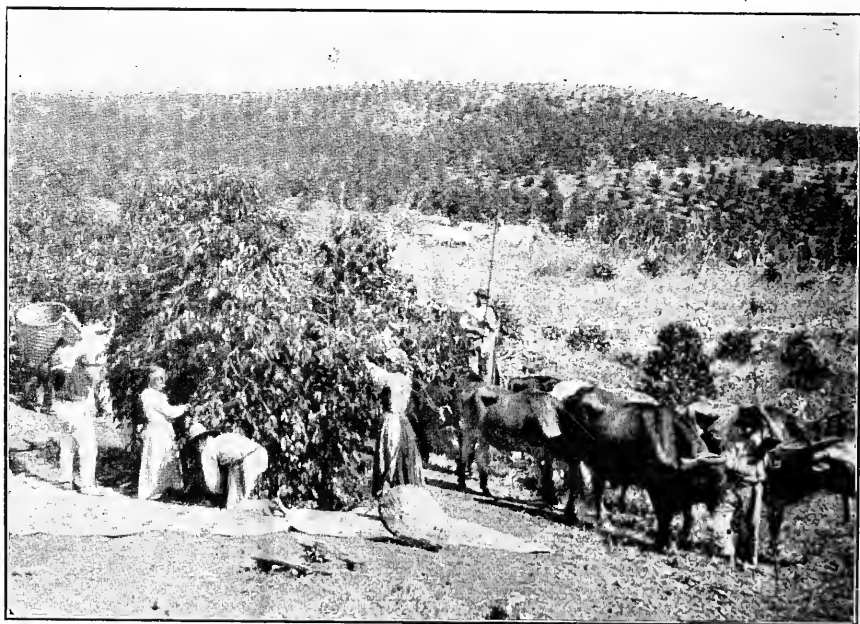
Before the tea plants can be set out the dense tropical jungle has to be cleared away. Every one drinks tea in this hot and sickly land for unboiled water is not fit to use.

Having finished our tea we will go shopping in the bazaars. Here we can see the beautiful silks, ivory carvings,

precious stones, jewelry and brass ware that we looked for but did not find upon the boat unloading at San Francisco.

4. **We find rubber and coffee from Java but none from South America:** Hunting along the wharves we come across a ship unloading rubber and coffee. The boat has a Dutch name and has just arrived from Java, one of the East India islands. We look in vain for a boat with either coffee or rubber from South America. Why is it that this great continent, which like Java lies in the hot belt, sends us no tropical products? We ought certainly to get coffee and rubber from South America because the products of the hot belt, like each of the other belts, are much the same all the way around the world.

Let us find South America on the globe. It does not appear to be as far in a direct line from any part of this continent to San Francisco as it does from Java. If you will examine the map carefully, however, you can learn from it why no rubber and coffee are shipped to San Francisco from South America. One of the highest mountain ranges in the world extends along the whole of the western side of this con-

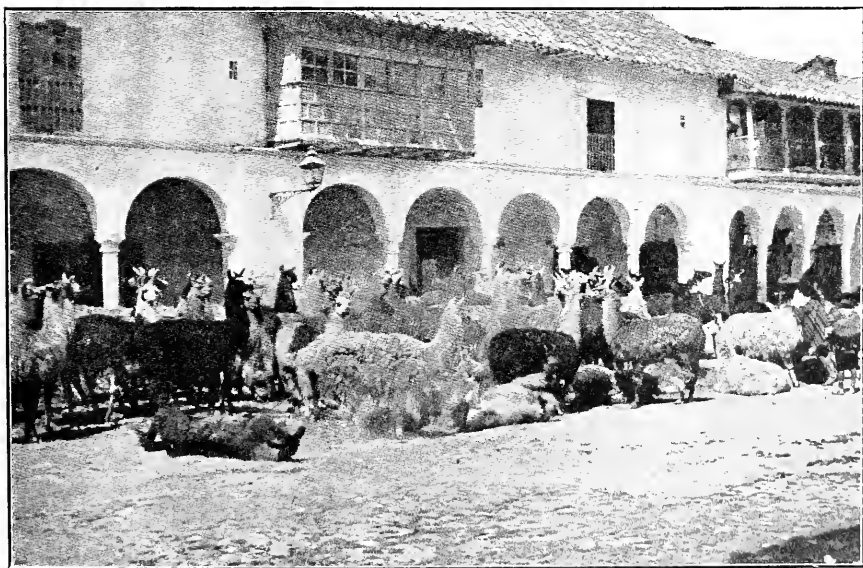


The coffee plantations in Brazil cover miles and miles of country. There might be enough raised here to supply the whole world. The pickers have spread sheets under a tree in order to save all the berries.

tinent. It would not pay to carry the products of the lowlands westward across the mountains to the Pacific Coast.

Great quantities of coffee and rubber do come from South America but the markets upon the eastern side of our country and of Europe are much larger and more easily reached than is the San Francisco market. Before the digging of the Panama Canal it was a very long voyage from the eastern coast of South America to San Francisco. Besides this city is not a good market for either rubber or coffee. The factories where rubber is prepared are in the eastern part of our country. The number of people in the East who drink coffee is also much greater. The larger part of the products of Java which we see being unloaded at the wharf do not stay in San Francisco but are shipped on East by train.

Upon the eastern side of South America and almost in the middle of the hot belt is the broad valley of the Amazon river. Because of the great heat and heavy rainfall this valley is covered with one of the most wonderful tropical forests in the world. In this forest the rubber trees grow wild and all that has to be done is to tap them and collect the sap



You might think this a scene in Spain if it were not for the curious animals. These odd creatures are called llamas and are used by the Indians to carry burdens. They are found only in the high valleys of the Andes Mountains in South America.

which contains the rubber. Hundreds of miles to the south across the country of Brazil there is a hilly upland region where it is a little cooler and drier and here the coffee tree flourishes.

Let us voyage to South America and learn what we can of the lands from which the rubber and coffee comes. The ship is headed for the mouth of the Amazon river. This river is so wide that we reach and enter it before any land appears in sight. That we are really in the river is proved by the fresh taste of the water. It is also proved by the pieces of wood that float past us.

The river divides into many branches before it reaches the ocean. We take one of these branches and are soon passing low shores covered with the most dense forest jungle we have ever seen. We cannot land and enter the jungle without having to cut our way through it. The country appears to be almost uninhabited. Here and there we obtain a glimpse of Indians and their rude shelters. The climate is not suited to white people and the work of clearing the forest is so great that few have come here.

It is because of the heat and moisture that the vegetation is so luxuriant. Plants grow so fast that if one made a small



A market scene in a mountain city of South America. The Indian in front is wearing a peculiar cloak called a poncho. This garment is woven in one piece with a hole left in the middle for the head.

clearing and then left it for two or three years he would upon his return have difficulty in finding it.

Giant mahogany and rosewood trees, palms of many kinds, rubber, and Brazil-nut trees rise through a thick undergrowth of small plants and are festooned with hanging vines. Many of the plants are brightly colored and exhibit gorgeous blossoms which have an almost overpowering fragrance. Many of the trees are valuable for their wood. Others, such as the cinchona tree, the bark of which supplies quinine, are valuable in medicine.

The animal life is fully as wonderful as the plant life. Many kinds of birds with brilliant plumage fly through the air or call from the jungle but their voices are not as sweet as our birds. Innumerable butterflies of every shade and color flit everywhere. We have to be on constant guard against insects and snakes. Even the ants are dangerous because of their size and numbers.

In the dense jungles we find the birds and climbing animals more numerous than those that live on the ground. Why is this? Troops of monkeys swing through the branches of the higher trees while occasionally we catch sight of an armadillo among the branches. In the more open parts of the forest sloths are to be found and if we keep very quiet we may discover a puma or jaguar watching for its prey.

Would you like the business of hunting rubber trees through such a forest as we have just visited? The work of tapping the trees and collecting the crude rubber is largely done by the Indians for they are used to the climate.

We will now leave the hot sickly forests of the Amazon valley, and journey toward the south. The air becomes drier and not so oppressive, and after a time, we reach the open country. For days we travel across the rolling grassy highlands of Brazil. In some places we see cattle and horses but most of this land is unoccupied except by wild animals and a few scattering Indians.

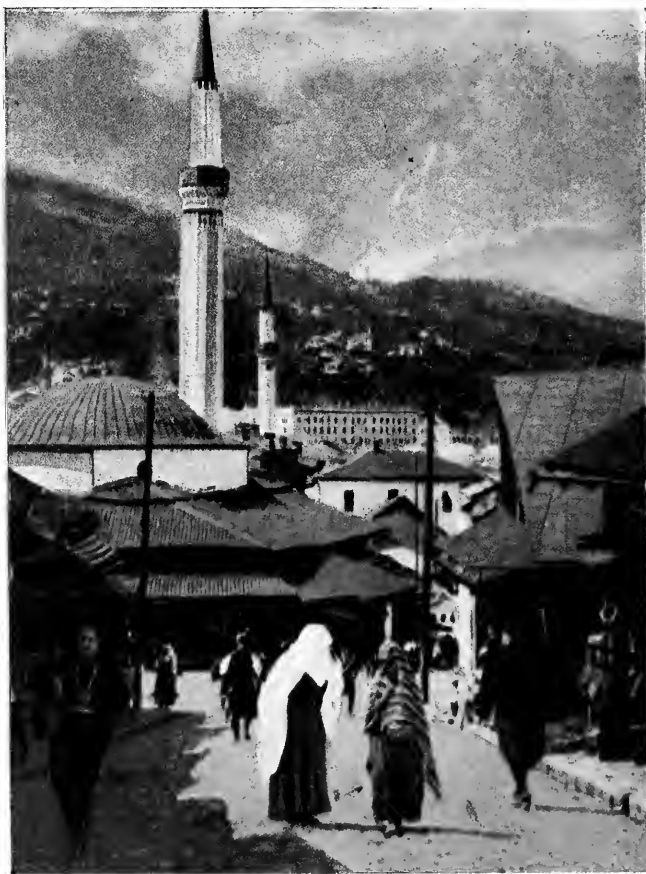
As we finally approach the ocean again we reach the region of the coffee plantations. How pretty the trees look with their pure white blossoms. The coffee tree is not a native of South America but came first from Arabia, that far distant land of Asia which also supplies us many dates.

Here in Brazil we find also great fields of cotton and sugar cane. As these plants also grow in the southern part of our

own country they help us to understand the climate of a part of South America.

5. Turkey sends us rugs, brass-ware, and sometimes figs and dates:

We come next upon bundles of rugs and brass-ware labeled Constantinople, Turkey. In what part of the world is the country of Turkey, what sort of people live there and how did their goods reach San Francisco?



The sights in a Turkish city are strange and interesting. The costumes of both men and women are different from those in other parts of the world. The roofs are covered with red tiles while here and there rise the tall spires, or minarets, of the mosques. From balconies high up in these minarets the priests call to prayer.

To return over the route by which they came we shall have to cross first the Pacific and Indian Oceans, the Red Sea and go through the Suez Canal. Our boat then turns northward until, passing through a narrow strip of water separating Asia and Europe, we reach Constantinople, the capital of Turkey and one of the most interesting cities in the world. The city is the meeting place of many different races and tribes of people living in Europe, Asia and Africa. You can tell the different peoples by the shape of their faces, color of their skin, by their dress and by their language. We cannot mistake the Mohammedan men with their red fezes nor their women, because of the veils worn over their faces.

How different the life of this city is from our cities. Almost everybody walks for there is only one street car line and few horses. All goods of whatever size or weight are carried by porters instead of wagons. Very strong men they must be to lift the enormous loads we see upon their backs. Here is one bound for the railroad station with a trunk weigh-



It is easy to get lost in the jungles which border the Amazon river; for there are many little channels wide enough for a canoe. Plants of many sorts overhang the water and offer a home for innumerable creeping and flying things.

ing two hundred pounds. Yonder are four men carrying a piano hung from poles across their shoulders.

The little shops are open to the street and the merchants have all their goods exposed in view of the passer-by. Men with brightly colored costumes sit in the streets in front of the cafes smoking long pipes as though they never had anything else to do.

In the bazaars the shop-keepers call to us begging us to stop and look at their goods. Each claims his are better and cheaper than those of his neighbor. If you buy anything you must be very careful or you will pay much more than the article is worth. The merchant will ask you at first two or three times what he expects to get and it may take several hours to agree upon a price. During the bargaining you sit and sip little cups of black coffee.

At the end of the bazaar we come to a great mosque where the Mohammedans worship. In front of the mosque is a fountain where the worshippers wash their feet before entering. If we wish to visit the mosque we take off our shoes at the door and put on slippers for the ground within is



These are Indians who live on the banks of the Amazon River in South America. They travel from place to place by means of dug-out canoes.

sacred. But strange as it may seem we are asked to keep our hats on. In various parts of the building we see men kneeling on beautiful rugs and praying with their faces toward Mecca, the Holy City.

Journeying now across the narrow strait which separates Europe from Asia we see how poor and wretched the country people are in their mud or stone houses. In this country, as in Spain, the forests have been cut down, the soil allowed to become poor for lack of care. The Mohammedan rulers of this country, known as Turks, are lazy and cruel and treat the different races of people under them as though they were slaves.

It is in this poverty stricken country that many of the beautiful articles of brass and the wonderful rugs that are found in our homes were made. There are no factories nor is any of the work done by machinery. It is all hand made, sometimes in the home and sometimes in little shops.



There are few drays in the streets of Constantinople. Porters do nearly all the carrying whether it be of pianos, huge packing cases, barrels or trunks.

How interesting it is to watch the making of a rug. A woman may work alone upon a rug, in which case it will take her weeks and perhaps months to complete it. A large rug may be woven by a dozen little girls. Instead of going out to play a part of the time as children do in our country these girls are kept steadily at work hour after hour. They sit in a row upon a bench in front of a loom, each having the pattern of that part of the rug she is to make. How deftly they insert and tie the different colored yarns.

We will now visit Damascus, one of the oldest cities in the world. Here they make beautiful dishes of brass and copper and inlay them with silver. Men, boys and little girls are at work in a shop. Some of the children are not ten years old but have learned to hammer in the threads of silver according to the pattern cut on the brass or copper.

If the journey across the desert is safe we will visit Bagdad, another ancient city. Here were first told those interest-



The poor people of Armenia have been oppressed by the Turks for hundreds of years. This Armenian family is moving and all their goods are on the rude cart. Look carefully and you will see that the wooden axle is fastened to the wheels.

ing stories of Aladdin or the Wonderful Lamp, Ali Baba and the Forty Thieves and others of the Arabian Nights.

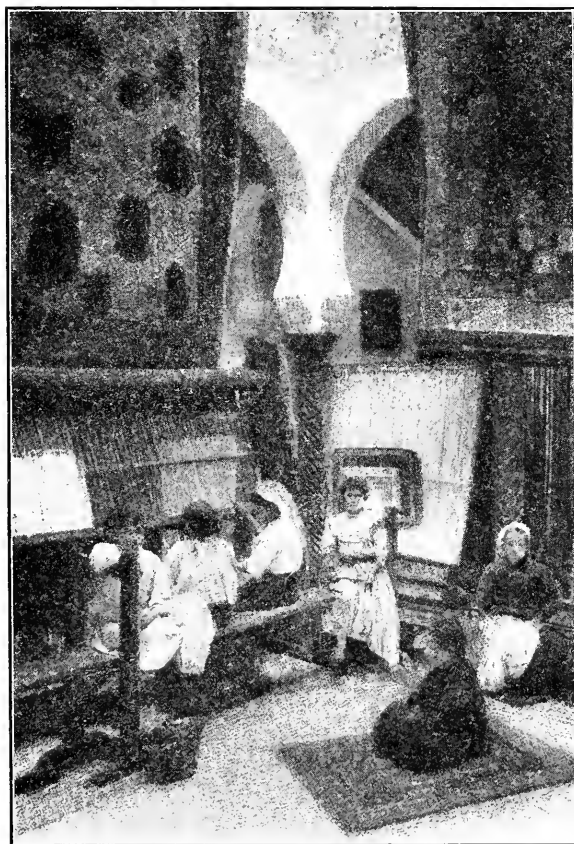
We shall be glad when the Turk who has so long ruled this land is driven out and the people who for hundreds of years have been almost slaves are made free and prosperous.

6. Boxes of dates call up in our minds pictures of palm trees in a far off desert oasis:

The boxes of dates that we see upon the fruit stands came from Arabia, which, like Turkey, is a most fascinating

country. A better quality of dates which are seldom found in our markets grows in the oases in the Sahara Desert in North Africa. It is a long journey to a desert oasis.

The boat that brought Sahara dates to San Francisco sailed for the most of the distance over the same seas as the one that carried rugs from Constantinople. Beyond the Suez Canal, however, the route is different. In order to reach the oasis where the dates grow we continue westward through the Mediterranean Sea past the north coast of



The little girls instead of being out at play in the fresh air and sunshine are weaving a rug by hand which it may take them months to complete. When you look at a beautiful Turkish rug think of what its story may be.

Egypt and land at Tunis or Algiers on Africa.

How much the mountains and valleys and plants look like those with which we are familiar. But the appearance of the people, their dress, manners and homes are very different. We never tire of wandering through the streets of Tunis and watching the people. Their homes and shops open directly on the street so that we can see them cooking, eating and doing their other daily tasks. How interesting to pass the baker's shop just as he has taken the bread out of the oven. The loaves are placed upon boards and set out in the



It is water that makes possible the beautiful and rich oases with their date palms and gardens.

middle of the narrow street to cool. We have to watch carefully to keep from stepping upon them.

But this is not the end of our journey. The oasis is still far away to the south. The first day's ride is upon the cars. As night approaches we pass through the coast mountains and reach a drier land just as we do when we pass the Coast Ranges of our own state. We leave the cars at a little town on the borders of the great Sahara Desert.

A camel train has just come in from the oasis far to the south. The huge saddle bags woven of bright colored wool are filled with dates. To reach

the oasis we shall have to take a camel ride. The awkward yellow beasts kneel with a great deal of groaning and we climb into the saddles. Now we are off across the sands. The "Ship of the desert" is all right as long as it walks but when it trots we have to hang on for dear life.

The Sahara is not like our California deserts. Some rain falls in our deserts and they contain many plants, animals and birds, but in the Sahara rain rarely falls. We can see no living things, nothing but stretches of bare earth with here and there rocky hills and huge sand dunes.

Climbing to the top of a dune we see in the distance a great forest of palms. These tell us that we are approaching an oasis. We can think of no better way of describing the oasis than to call it an island in an ocean of sand. Wherever there are springs of water an oasis is formed. If there is an abundance of water the oasis may be some miles in extent, and contain tens of thousands of palms and several villages.

As we approach the oasis open spaces appear among the palms. In these are gardens irrigated by ditches of water.



This is a summer pasture in a valley of the high Alps. For a few weeks in summer the cattle find plenty of grass but in winter the snow lies deep.

The flat roofed mud houses of a village come in sight. We enter the main street, which is bordered upon either side by mud walls. In these walls are little doors giving entrance to the houses but there are no windows upon the street.

The road leads to a large square where the weekly market is held. Here we meet dignified Moors and Arabs with turbans, white cloaks and bare feet. They scarcely look at us and even the children show little curiosity. The mothers we do not see at all for they are not allowed on the street.

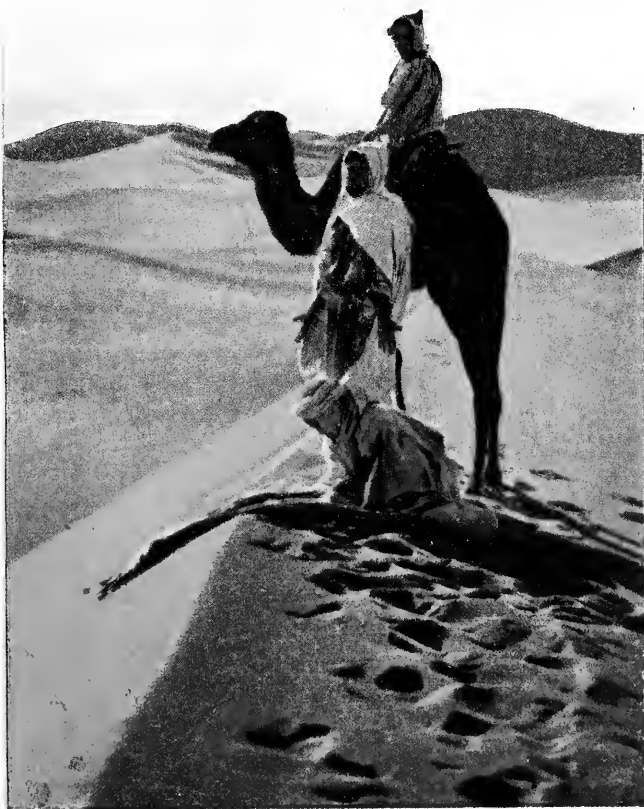
The square is wonderfully interesting on market days. People come with donkeys and camels from all parts of the oasis with every kind of thing for sale that one can think of. Each merchant sits quietly behind his goods waiting for a buyer. Now an Arab from the desert rides through on his



Would you not like to visit an Arab school in an Oasis? A rug has been spread on the ground, the children have taken off their slippers and have seated themselves cross-legged around their teacher and are studying the Koran.

horse. Next a camel train comes in and the camels kneel and have their loads removed. In one corner of the market a Hindu juggler with his cobra performs and at the sound of his little flute the snake lifts itself up and swings back and forth.

At one side of the square is a large building with a slender tower or minaret. This is the mosque and the priest goes up to the balcony at morning and evening to call the people to prayer.



To reach the oases we may have to cross these great dunes of drifted sand. The Arabs have stopped for the noon-day prayer and one is kneeling with his face toward Mecca, the holy city of the Mohammedans.

Is it not interesting to know that the children in this far desert oasis also go to school? But what a strange school it is. The master takes the children out under a palm tree close to a ditch of water. A blanket or rug is spread on the ground. Each removes his slippers, placing them behind him, and all sit down cross legged in a circle before their teacher.

There is only one book to be studied and that is the Koran—the Mohammedian bible. Each child has his own copy. They do not study quietly but chant their lessons aloud and sway their little bodies back and forth, keeping time to the chant.

As it is the season for ripe dates men are at work cutting them down. The fruit hangs in large bunches near the top of the palms and can be reached only by climbing the bare trunks. The date and the camel are the most valued possessions of the desert Arabs. Without the date the oases could hardly be inhabited, and without the camel it would be difficult to reach them.

7. Here are some cases marked—Switzerland: Let us go with these cases to the custom house where the government officers open them. Perhaps we can tell from the goods which they contain what sort of a country they came from.

The first case contains beautiful wood carvings of birds, animals and men. Most wonderful of all is an eagle with spread wings. The second case contains milk chocolate. If you have never eaten Swiss chocolate you do not know what you have missed.

Do these things tell us anything about the country and the people? The wood carvings suggest that the climate is stormy and that there is much time during which no outside work can be done, and that the men and boys spend their time in wood carving. The milk chocolate suggests that this country must contain large numbers of cattle and that dairying is one of the leading industries.

Examining the goods more closely we find that the carvings are labeled in words of the German language and the chocolate is labeled in French. The Swiss, then, can have no language of their own but speak the languages of the countries around them.

We will now turn to the map and find Switzerland. Here it is, a little country in the heart of Europe without any sea coast. Powerful nations surround it on all sides. On the

west of Switzerland is France and on that side French is spoken. On the north is Germany and in this part the language is German. On the south is Italy and the people speak Italian. On the East is Austria and in that part German and a curious language known as Grison is spoken.

How is it that this little country with no language of its own has not been swallowed up by the nations around it? The map tells us that Switzerland is a land of mountains, of the highest and most rugged mountains in Europe. It is really the peak of Europe for in its mountains four great rivers rise and flow away in four different directions into four different seas. The mouths of these rivers are so far apart that you would have to travel almost around Europe to reach them all.

Is it not, then, because the Swiss live among mountains that they have been able to keep their little country free? Protected by the mountains they have been safe in their beautiful valleys.

We get wood carvings from Switzerland because they do finer work than any other people. A carved bear standing in front of a Swiss shop is so life-like that one at first sight

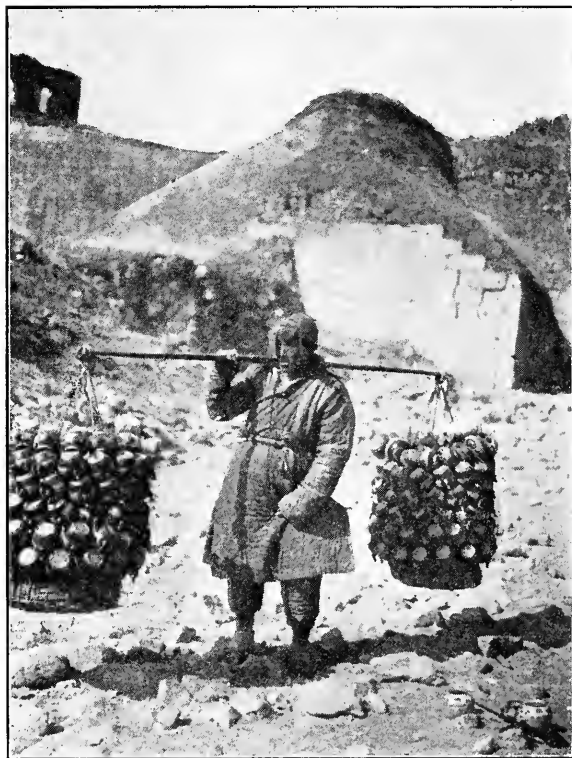


In South China a strange looking wheelbarrow is used to carry goods and even people. Usually one man pushes it but sometimes another goes ahead and pulls.

fancies it is a real bear. Because of the cold wet climate of the mountains there is much of the time that work cannot be carried on out of doors and so many industries have grown up in their homes. They not only carve wood but make fine

watches, jewelry, pottery and lace.

In the lower valleys the grass is always green because of the frequent rains. In the higher valleys it is very cold and the snow falls deeply in winter but in summer these valleys also are covered with green grass. Because of the grass stock raising is an important industry. In winter the cattle are kept in the lower valleys, but when the warm days come and the snow has melted they are driven to the higher slopes. Throughout the summer we hear the tinkling of the cow bells in the



This Chinaman is going to market with a load of tea-pots. It has taken him many days to make them and he will have to carry them miles before he can sell them all. He must balance them carefully for they are easily broken. His home must be cold if we can judge from the thick padded clothes he wears.

meadows just below the icy glaciers. Here are little mountain chalets, the summer homes of the herders and their families. These rude cabins are made of logs, while the roofs are kept from blowing off by piling rocks upon them. The butter and cheese may be made in these little cabins or the milkers may carry the milk down to the lower valleys in great cans tied upon their backs.

Because the wealth of the Swiss is in cattle the most important farm products are butter and cheese. The Swiss do not drink as much fresh milk as we do for they prefer to take it in the form of cheese. We like their butter but the

great cheeses smell so strong we keep as far away from them as possible.

Large quantities of milk are also used in making sweet chocolate. This is so delicious and is put up in such neat little packages that every one who goes into the Alps takes it with him.

So many people spend their summers in the Alps, climbing the high peaks and glaciers that Switzerland has come to be known as the "playground of Europe." Thus the Swiss have become a nation of hotel keepers and depend largely upon



The main street in Mukden, a city in Northern China. Most streets in Chinese cities are much narrower than this one. Note the curious dragon signs over the stores.

the tourists that visit their picturesque land.

If you want to spend a summer in the mountains of Switzerland you have to get prepared for quite a different life from what you would if you went into our own High Sierras. In our mountains the summer climate is so delightful and sunny that we camp and live in the open air. In Switzerland

it rains so often that people never think of camping out but spend every night in some hotel.

People visit Switzerland in the winter as well as summer. While the snow lasts there is skating, tobogganing and skiing with snow shoes. Although the climate of Switzerland is very disagreeable yet the high snow-covered mountains, glaciers and dashing rivers form so great an attraction that people cannot stay away.



He who has seen the midnight sun will never forget it.
To stand on the deck of a boat in the Arctic ocean
and watch the sun follow the horizon with-
out going down although the hour is
midnight is a strange experience.

8. **Where do the little round cheeses come from?** We may not find any round red cheeses upon the wharves of San Francisco but we have all seen them in the grocery stores. They are called Edam cheeses. What a strange name. It does not sound like any place in our own country but like the ending of such names as Amsterdam and Rotterdam. These are Holland cities and the little round red cheeses are named after a village of that country.

We have just been reading about Switzerland, the highest and most mountainous country in Europe where, because of the green meadows, dairying is the chief industry. Now we have come to Holland, the lowest and most level country in Europe, where also because of the wet climate there is an abundance of grass. Grain and hay and cattle are for this reason the most important farm products. In Switzerland a large part of the land is too rocky and steep for any kind of farming, but in Holland almost every foot of land can be cultivated.

But the most interesting thing about Holland is that a large part of it is really below the level of the North Sea. If it were not for the constant fight that the people are carrying on with the waters of the North Sea there would not be much dry land in this little country.

For hundreds of years the people have fought the sea by building dikes of earth to keep the tides and waves from sweeping their homes away. In this way they have saved the lowlands on which now dwell hundreds of thousands of people.

Once, long centuries ago, the sea did get the best of them. If you will look upon the map you will find a great bay in the north of Holland called the Zyder Zee. This was once dry land but during a severe storm the waves broke over the dikes, destroying hundreds of villages and drowning or driving away many thousands of people. Perhaps if the water were clear we might see the ruined villages upon the bottom.

Since the great flood happened many dikes have been rebuilt and the water pumped from thousands of acres of fertile fields. This work is still going on and perhaps sometime the Zyder Zee will be pumped dry and given over again to grain fields and herds of dairy cattle.

The best way to see Holland is to take a trip on one of the many canals. How odd it seems to glide quietly through

green fields, through villages, past farm houses and wind mills on a boat instead of a noisy car.

How odd it seems also to find the water on which you are sailing higher than the fields on either side and to look down upon them instead of up as we do to the banks of a stream. Now and then the boat stops for a bridge to be raised or to pass through a lock to another part of the canal where the water stands at a different level.

The tops of the canal banks are broad and flat and are used as roads. As there are no hills and the roads are smooth, dogs are very often used to pull loads. Sometimes we see a man or woman harnessed in with a dog. Here comes a milkman's cart drawn by a huge dog that seems as much at home in the shafts as do our horses.

Upon some of the wharves that we pass are huge piles of red Edam cheeses like those in our home markets. These cheeses are noted all over the world. The Hollanders love milk and drink a great deal of it. We can stop in any village



The smooth level roads along the canals in Holland make it possible to use dogs to take milk and other produce to market. Notice the wooden shoes the man is wearing, also the windmills which pump the water out of the meadows and into the canals.

or city and buy a drink of milk in what they call a "milk saloon."

The huge windmills, each with its four great arms slowly turning in the sea breeze are very interesting. Many of them are grist mills and to them the farmers come to have their grain ground just as our farmers carried their grain to mill long ago. The mills are also used to pump the water from the fields and marshes for if this work were not kept up continually they would be flooded again.

How curiously the people of some of the villages are dressed, the men with their baggy trousers, the women with their lace caps, while the children and all clatter about in their wooden shoes.

The raising of cattle, hay and grain are not the only farm industries in Holland. Near the ocean are miles and miles of lily fields, the bulbs from which we find in our own seed stores. Beautiful and fragrant are these vast flower gardens.

Although Holland is so rich and so carefully cultivated there are more people than can be fed. Every year ships come to San Francisco to load wheat for this little country.

Holland also makes beautiful pottery and porcelain ware. The blue china dishes in your homes with the pretty scenes painted upon them were probably made there.

Can you think of any other business that the people of Holland might carry on? Look at the map and you will see how many harbors the country has. The people are used to the water and have become fearless sailors. Their boats carry freight back and forth between all the great ports of the world.

Winter is a delightful time in Holland for the children. Then the canals freeze over. Sleighs take the place of boats and everyone is out with his skates. Here in our sunny California valleys we rarely see the snow fall and do not know the pleasure of ice skating and sleighing. Sometime, however, when there are more good roads we may make use of our snowy mountains for winter sports as we now use them for summer camping.

9. A great steamship is discharging a cargo from China: Among our neighbors on the other side of the Pacific Ocean is the country of China that contains more people than any other upon the whole earth. It is so crowded that many go

to distant lands to live, and so it has come about that there are thousands of Chinese in California.

When first we saw the Chinese in their thick padded clothing, bamboo hats and wooden soled slippers peddling vegetables from two huge baskets hung from a pole balanced over their shoulders, we thought them very curious people. When people from our country first went to China the Chinese would in their turn gather around and poke fun at the strange looking barbarians, for they thought they were much more civilized than we.

Let us first learn what we can about China from the habits of the people and the things which they send us. After that we will take a little journey through their vast country.

The padded cotton clothing worn by the Chinese tells us that they do not have flocks of sheep or goats to furnish wool but that cotton is easy to get. The padding of their garments tells us farther that the winters must be cold and that they have little fuel. The fact that the Chinaman is so used to carrying great loads makes us quite certain that they have few horses and wagons.

The most valuable part of the cargo of the steamer that



Pekin, the capital of China, is surrounded by a great wall outside of which the country looks barren and deserted. A camel train is just arriving. It may have come more than one thousand miles across the vast deserts of Central Asia.

has just arrived from China is silk. It will be taken by train to the factories in the eastern part of our country and there made into beautiful cloths.

In order to have so much silk to sell the Chinese must grow mulberry trees and raise great quantities of silk worms. Now, since the mulberry trees thrive in the valleys of California, we must conclude that at least a part of China has a climate like that of our home-land.

Another part of the cargo consists of sacks of rice. Of course we should expect that rice would grow in China for we have heard so much about the Chinaman and his chopsticks and bowl of rice. We grow rice in our own state so that from this product we learn still more about China.

Now they are hoisting chests of tea out of the vessel. In China the water is usually not fit to drink. The Chinese are always making tea and offering it to their visitors—and such delicious tea it is! The tea plant thrives in a warm moist climate, as we have already learned. Thus where the tea is produced the climate must be different from any part of our state, for we cannot grow tea.

Are these things all that we get from China? No, for some of the most beautiful silk embroideries come from there. We also get porcelain dishes and bamboo articles of various sorts.

We will now take a peek at the real China. Only a few years ago the Chinese would not let strangers enter their country. They looked upon every one else as barbarians. They shut themselves away from the rest of the world and on the north built a great wall more than one thousand miles long to protect themselves.

We cross the Pacific Ocean, sail through the Yellow Sea, so named from its muddy waters, and land at the mouth of a great river. How shall we journey inland? We might find a cart drawn by a little horse but it would be tiresome riding, and, besides this, there are very few roads. We might engage one of the strange looking wheel barrows that are used for carrying freight, but this would also be very tiresome. The best way to reach the heart of the country is by means of a river boat. We can land wherever we wish and see how the people live.

We discover that China is a land of great plains stretching as far as we can see. Here and there are barren looking

mountains. The trees have been cut from the slopes and the rain water runs away so rapidly that it takes with it much of the soil. The muddy waters give the name Yellow Sea to that part of the ocean into which they empty.

The villages are scattered thickly over the plains. There are so many people to be fed that every bit of land is cultivated. They cannot afford space for roads and so we have to use the narrow foot paths between the fields.

How poor the villages look with their mud houses. How poor the people look as they crowd around to see the foreigners. The children look like little dolls in their thickly padded



A Japanese paddy field is an interesting sight with the laborers in their curious costumes wading in the mud and water setting out the young rice plants.

trousers and coats. There is so little fuel that these warm clothes are put on in the fall and never taken off until spring.

The main street of a city that we pass through is not wide enough for a horse and carriage. We can almost touch the houses on either side with outstretched arms. The people crowd each other in their efforts to pass with their great loads hanging from their shoulder poles. We do not wonder that Chinese leave this crowded land whenever they can and go to America and other lands where there is more room.

Now Pekin, the capital of China, comes in sight. We enter through a huge gate in the massive wall that surrounds the whole city. If we are fortunate we shall see a camel train coming in from the wilds of Central Asia.

Pekin is divided into several cities by walls. We first enter the Chinese city; then we go through another wall to the Tartar City. Within the latter and also surrounded by a wall is the Imperial City in which the emperor once lived. In the centre of the Imperial City is the palace of the emperor.

The best place to go to see the people is a fair. The little stands and booths contain everything imaginable. In one part are toys of almost infinite variety. In another part ancient



The Pekin cart does not look like a very comfortable way of getting about the rough streets. In most parts of China there are no horses and one cannot even get a cart in which to ride. The driver is dressed as though it were cold.

porcelains and bronzes. In another, ornaments of green jade stone. In another are necklaces and rosaries of beautiful amber beads. We stop to bargain for a piece of jade and soon a crowd of men, women and children gathers around. They are very curious and want to see what we are looking at. We try to escape the crowd but still they follow.

The Chinese are good farmers but they do not take care of their mountains. The soil is being washed from the steeper slopes and floods and famines are frequent. They seem to care little for the wonderful buildings that are crumbling away. But they are beginning to awake from their long sleep. They are now anxious to learn from foreign peoples whom they once called barbarians.

10. The Japanese at home: A visit to a Japanese store will show the many beautiful articles which Japan makes and sends to other countries. There are silks and embroideries, porcelains, bronzes, lacquer work and baskets.

To see the Japanese and their treasures at home we must visit one of their magnificent temples during the cherry-blossom festival. The Japanese take great pride in their temples, which are usually surrounded by beautiful gardens and groves of giant trees.

The temples shine in their coats of many colored lacquer almost as brightly as do the little lacquer boxes with which we are all familiar. At the entrance to the temple gardens are huge wooden gateways called *Tori*. The walks are bordered by finely carved stone lanterns. In some of the gardens are little ponds with stone bridges leading to islands upon which are tea houses.

Men, women and children dressed in their holiday best crowd the temple grounds. The blossoming cherry trees, the gay parasols, the brightly colored cloths of the curious costumes make a picture we can never forget. Among the crowd are many pilgrims in more sober garb, each carrying his gourd water bottle. Each temple or shrine is noted for some particular thing and so pilgrims often travel a long distance to reach the one in which they wish to worship.

Along the borders of the walks leading up to the temples are little shops containing everything beautiful that the Japanese manufacture. Among these are porcelain dishes, pottery, bronze dishes, carved wood and bamboo work. At these shops the tourists as well as pilgrims buy souvenirs to take

home with them. In some of the temple grounds are tame deer that come up and eat out of your hand.

In the centre of each temple is the shrine. If it is a Buddhist temple there is a statue of Buddha sitting cross-legged. If it is a temple of another religion it may contain a fierce-looking image of some evil spirit. Visitors throw small copper coins before the images. This money is used to support the temple and the priests. Lanterns hang in various places and there are many great incense burners giving out a pleasant perfume.

If we go shopping in one of the cities we find an endless variety of things to interest us. There are wonderfully decorated vases, exquisite bronze ware inlaid with silver and gold, jewelry of every description and last of all silk embroideries. When we turn to enter a store an attendant at the door asks



Tea plantations look much the same whether they are in Japan, China, Java, Ceylon or India. The people picking leaves in this picture are natives of Java.

us to take off our shoes and put on slippers so that no dirt from the street will be carried in.

How neat and clean the little bamboo houses are. They have light movable walls and screens. During the day some of these are taken down, leaving the front rooms open to the street. Here we see the owners sitting on the floor eating or sipping tea. The walls are often decorated with fanciful paintings of flowers, birds and beasts.

At the stations on some of the main railroads are tea stands where for four sen (two cents in our money) one can buy a little pottery tea pot containing a pinch of tea, a cup to drink out of and hot water to make tea. Thus one is sure his tea is fresh and clean.

As we go through the country we are surprised at not seeing any horses or cows. The Japanese do not care for milk and usually walk when they wish to go anywhere. When, however, one has money to spare he rides in a rickshaw. This is a light spring cart with shafts in which a coolie takes the place of a horse. If the road is level he will pull your rick-



This picture shows some Fijians in their gaily decorated canoe. The natives of all the many thousands of islands that dot the Pacific Ocean are thoroughly at home upon the water and make great canoes in which they travel from one island to another.

shaw at a trot for many miles. Where it is hilly a second coolie pushes behind.

Among the most interesting sights in Japan are the children. Dressed in their brightly colored garments they look like dolls. The little girls act as nurse-maids for the babies, carrying them around tied on their backs. Often the babies fall asleep and their heads seem in danger of rolling off.

Everywhere we see the school children going on excursions to visit different temples and historic places. They set us a good example in studying the real things out of doors instead of reading about them.

11. A warehouse is filled with the products of the Hawaiian Islands:

Here is a warehouse filled with thousands of sacks of sugar, thousands of cases of canned pineapples and hundreds of bunches of bananas. These are products of some tropical country, and as there is such a great quantity of them we should judge that the country must be a large and important one. What is our surprise to learn that they all come from a group of little islands lying in the midst of the Pacific Ocean.

Why do these little islands send us so much when we never see anything in our markets from such great countries as Russia? One reason is that these islands lie in the hot belt, have an abundant rainfall and are very fertile. Another reason is, as you can see from the globe, that our country forms the nearest market. A third reason is that the islands produce just the things that we have need of, sugar cane being the only one of these products grown in our own country.

Many people spend their winters in the Hawaiian Islands which, though they lie in the edge of the hot belt, have a mild climate because of the broad ocean all around them.

We will take a swift steamship which after passing out through the Golden Gate turns toward the southwest. Long before reaching the islands the air becomes warm and agreeable and showers of rain are frequent. The first land that comes in sight is formed of steep mountains. These rise directly out of the ocean while their tops are hidden in misty clouds. Their slopes are covered with deep green vegetation.

We enter the harbor of Honolulu and discover at once upon landing that we are in a tropical land. There is not a flower or a tree to remind us of California. We will first

make a circle of the island on a fine road and visit the banana, pineapple and sugar plantations. Everywhere we see the dark-skinned natives, whose music delights us. There are also many Japanese and Chinese, for the plantations require more workers than the islands afford.

Next the bathing beaches call us. The huge green waves break upon a broad sandy beach, behind which rise tall palm trees. The native Hawaiians are almost as much at home in the water as on the land. Here they come riding the crests of the waves on their small boards and land almost at our feet.

How strange to find such beautiful fertile islands in the midst of the great Pacific Ocean. They are not ordinary islands but are the tops of great volcanoes that rise from the deepest part of the ocean. Upon one of the islands there is an enormous active volcano more than two and a half miles high.

Let us visit the crater of this great volcano and learn more about it. The crater is a cup-like hollow in the top of the mountain. Here and there in the bottom of the crater are cracks in the hot lava rock through which steam is issuing. The rocks on which we walk are almost hot enough to burn our shoes and in several places we can look down a deep fissure and see the glowing lava. At times one cannot enter the crater for it becomes a fiery mass of molten lava boiling and steaming like a great kettle. Occasionally the lava boils over and a stream of fire runs down the mountain, destroying the forests and plantations that lie in its path. During a recent eruption a stream of lava reached the sea. It poured over the cliffs like a waterfall and as it struck the water a great cloud of steam arose, accompanied by a loud roar.

12. From Far Northern Regions come important products: We have learned something about the tropical lands far to the south and the products we receive from them. We are not surprised that these lands of heat, rain and sunshine supply many things, but it is strange that the cold barren north has anything for us.

What do we find upon the wharves from Alaska and other parts of the North? A steamer is unloading thousands of cases of canned salmon, and many bales of valuable furs, while an express messenger is just leaving the boat with some small heavy packages which we learn contain gold. A dirty looking sailing vessel is discharging casks of whale oil and masses of

whale-bone. Lying out in the bay, just ready to depart for the north, is a fine steamer loaded with tourists. What can be taking them to that far region? The cameras they carry should suggest why they are visiting the north. Alaska has wonderful scenery for it has the highest mountains of North America. It has great streams of ice called glaciers. It has thousands of islands and bays, the shores of which rise in picturesque cliffs from the water's edge.

Among the articles shipped to San Francisco out of the North there are no food products from the land. We certainly could not expect any since the Laplanders and Esquimaux who live there have to depend entirely upon animal food except for a little time in the summer. Then the long days call into life for a few weeks a multitude of flowers and low berry bushes, the latter loaded with delicious fruit. The long cold winter when the natives have to live mostly upon dried fish is replaced by a short summer, during which wild animals, birds and berries abound and the streams are full of fish.

The miners who go to the inhospitable north have nearly all their food shipped from San Francisco or some other southern seaport. It has been discovered, however, that in some of the far northern valleys the summers are long enough to grow such vegetables as lettuce, turnips, beets and cabbage.

The globe or map tells us why the waters of Alaska are so filled with salmon and other fish. The coast line is so broken by deep bays and islands that one might easily get lost among them without a sailor's chart. This is just the sort of a coast that fish like and so the waters form the home of countless numbers. Most important among these are the cod, halibut and salmon. Most ocean fish spend all their lives in salt water but the salmon seek the rivers in order to lay their eggs in fresh water. Many ice-cold rivers flow down from the snowy mountains and at the mouths of these salmon canneries have been built.

Those whales most valuable for their oil once abounded in the icy waters of the far north, but now they are so nearly exterminated that it is not often we see a whaling ship in San Francisco Bay. It is fortunate that we have now other sources of light for our lamps or the scarcity of whale-oil would make lights very expensive.

The Alaskan furs are highly prized. A part of them are obtained from the Indians through trade. Among these furs

are those of the great polar bear, Arctic fox, otter, etc. The most valuable of the furs are those of the seal. The fur seal inhabits the shores of islands in Behring Sea. The hunting of these animals is carefully regulated and only a certain number are allowed to be taken each year.

Whatever part of the earth we visit we find that the people living there think their home is the best. The people of the tropics prefer hot weather. We like the climate of our home the best for it is between the very hot and the very cold. The Esquimaux and Laplanders would not feel at all at home in our mild climate and prefer their icy lands.

How cheerless is the winter home of the Esquimaux. It is built of blocks of stone or cakes of snow with a low entrance to help keep out the cold. There they stay through the long cold winter night, tucked in most of the time like squirrels in their winter home. They have no fuel for fires but keep from freezing by means of lamps burning fish or whale oil.

When the spring comes the dogs and sleds are brought out and the families journey to the hunting and fishing grounds; here they make temporary shelters of skins. The father goes out in his skin boat for seal and walrus and meets all kinds of dangers. The skins of the animals are used



Here is a group of Filipinos carrying milk from the country into Manila. It must require considerable practice to balance such loads on their heads.

for clothing and the meat not at once eaten is dried, while the fat is tried out and saved for the winter lamps.

The women and children help prepare the skins and dry the meat. As soon as the snow has gone the imprisoned plants spring up, open their blossoms, and in a very short time the wild berries are ripe. The birds come from the south and for a few weeks the world, so dead through the long winter, is full of life.

The Esquimaux depend almost wholly upon hunting and fishing. The Laplander has in addition his herds of reindeer, which furnish much of his clothing and food.

13. We carry on an important trade with the Philippine Islands: Upon what part of the globe shall we look for the Philippine Islands? Perhaps an examination of the piles of Philippine products just unloaded from a great steamer will help us to answer this question. Here are many coconuts, bags of rice, sugar, coffee and cocoa beans, and bales of Manila hemp. We decide at once that the islands lie farther south than California and where it is hot throughout the year and that they must be near Asia on the opposite side of the Pacific Ocean.

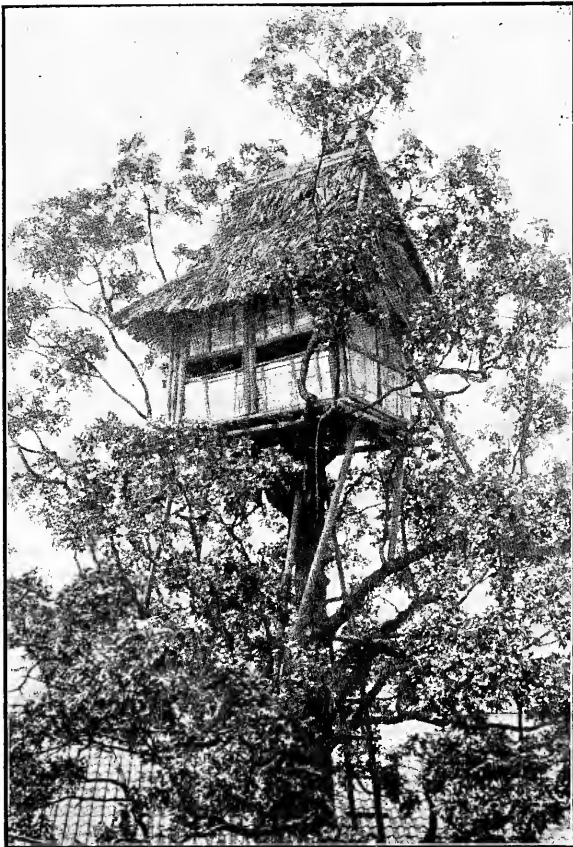
The Philippine Islands are interesting to us because they belong to the United States. To reach them we take a steamer by way of Japan and China. The trip is a long one, but the ocean is usually quiet. The ship's course is first to the Hawaiian Islands, where the warm moist air and rank vegetation tell us that we are in the Tropics. Japan is reached next and here we are back again in a climate much like that of California.

The boat turns southwestward from Japan to Hongkong. After reaching this place we again turn out into the ocean until the wonderful group of tropical islands of which we are in search comes into view.

We land at Manila, the capital, which does not seem as strange a city as we should expect it to be, because the Spaniards once held it. They put up many buildings much like those the Spanish missionaries built in California.

It is not until we leave the city and go out into the country that we see the real Filipinos in their homes. Heavy rains in this tropical land, together with a hot sun and rich soil, covers the earth with a dense jungle full of new and wonderful plants.

In the clearings which have been made in the jungle, the nearly naked Filipinos are at work. Their tools are poor and they have no animals to help them but the water buffalo. This animal is at home in the muddy rice fields, but is used for all kinds of work.



Some of the natives of the Philippine Islands build their homes in trees and reach them by long ladders. They are safe from wild animals and from surprise attacks by enemies.

When it is very hot and flies are bad, the water buffalo seek refuge in ponds. They present a strange sight with only their heads sticking out of the water.

The farther back into the jungle we go the more wild and savage the natives are. In the remote mountains are the "head hunters," who were once greatly feared by the other natives.

We discover that bamboo is used here for every purpose that we use wood at home. It serves as a framework for their houses, for fences, matting, baskets,

etc., while the palm leaf is used on the roof as in other tropical regions. The rain-fall is so great that the ground is always wet. Because of this the houses are built up some distance above the ground and the space underneath is left open.

Growing about the villages are many curious fruits which we have never seen before. These never reach the San Francisco market because they decay as soon as taken away from

their home. Some of the fruits, such as bananas, we are of course familiar with.

We see plantations in which are grown the graceful trees resembling the banana palm and from which the glossy yellow Manila hemp is obtained. Manila hemp is prized above all other kinds, since the strongest ropes and cables are made from it.

The growing of rice is one of the most interesting of the industries. Rice fields, each surrounded by a low embankment to hold the water, cover the country in places for miles. We see the men at work in the water. Some are setting out the young plants; others are plowing with the water buffalo. Occasionally two men may be seen pulling the plow and a third one holding it.

The rice fields are often found on the sides of the mountains, for the climate is so wet it is easy to obtain enough water anywhere. The water is held in each field by an embankment.



The so-called Panama hats are made in many places besides Panama. The Filipinos and other peoples of the East India Islands to the southward also weave fine soft hats. The picture shows Javanese women weaving such hats.

Manila hemp they do not have much use for, and as there is a good market for it in our country, a large quantity is shipped here. Bananas and pineapples we can get nearer home, and so we do not send to the Islands for them.



A pretty African village in a banana grove. Note the thatched huts and the mortar and pestle for hulling or crushing some sort of grain, perhaps rice.

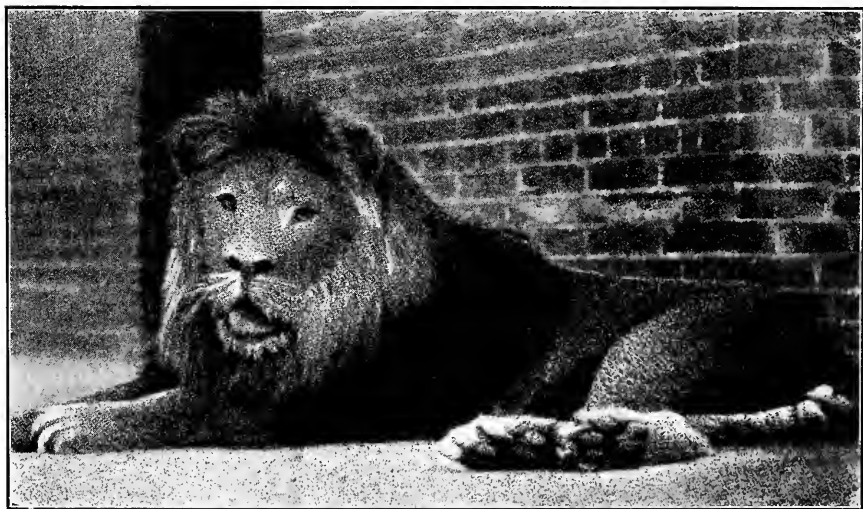
As we travel through the many different islands we meet people of different races. In the remote mountains there are wild people who are said to be cannibals. In the southern islands there are Malays, who are fierce and treacherous.

14. Why Africa sends us so little of her products: We never find upon the wharves or even in the shops any African products unless it be a few dates from the Sahara Desert. Why is it we have so little trade with the great continent of Africa?

We see from the position of Africa on the globe that it lies very far away from California and quite near some of the other countries that we have talked about. This is one reason why we trade very little with the people of that continent.

We have already sailed around the southern end of Africa on one of our voyages to England and have stopped at Cape Town, the farthest point south. There we found a climate much like that of California. On another voyage we sailed through the Mediterranean Sea and stopped at Tunis on the north shore of Africa. You may remember that upon landing we found there also a climate similar to California.

Now, since both the northern and southern parts of Africa have a mild or temperate climate like California, do you not think that the central part ought to have a hot climate? Fol-



The lion is the largest of the cat family and since he lives on the flesh of other animals he makes his home on the borders of the dense forests of Central Africa where there is some open grass-land to which the buffalos, giraffes, antelopes, zebras and other animals go to feed.

low the hot belt around the world and you will find that it does extend through the heart of the continent. Much of this region is, then, because of the heat and fevers, not well suited as a home for white people. It is inhabited by wild and uncivilized negroes. We sometimes call Africa the "dark continent." Perhaps it is because it is mostly inhabited by dark people, or it may be because we know so little about much of it.

The needs of the black people are few and their own land supplies these. Some have cultivated gardens and there is everywhere an abundance of game.

Large and fierce animals, of which the lion is king, are found in Africa. There are other large animals not so fierce, such as the elephant, rhinoceros, hippopotamus, giraffe, etc. Some of the little insects are fully as dangerous as the great animals. Among them is a poisonous fly that has driven the natives and some of the animals away from parts of Central Africa. The ants are fully as dangerous as those of South America.

There are two products of Southern Africa that are very valuable. One is gold and the other is diamonds. In Central Africa, where most of the blacks live, the traders who go among them have made the getting of ivory, elephant tusks, an important business.

Although we have very little to do with it, yet Africa is a wonderful country. In the central part are found the greatest number of uncivilized people living anywhere in the world.

In the north is the Sahara, one of the largest and worst deserts in the world. In the eastern part of this desert is Egypt with the Nile river flowing through it. Here lived the first civilized people of the earth. The wonderful temples built thousands of years ago are still standing. The descendants of these ancient people are today poor and ignorant.

15. Where are the products of Norway and Sweden? There are many people living in California whose homes were once in Norway and Sweden. Why did they come to California? Why do we get none of the products of these countries?

If you will look on the globe you will find Norway and Sweden away in the north of Europe. They form a peninsula of mountains almost surrounded by water. What does the map tell us about these countries?

In the first place, the map says that being so far north they must have a cold climate. Their climate must be colder

than England and very much colder than Spain, from which, as we have learned, came many of our California fruits. The map tells us also that being almost surrounded by water these countries should have a moist climate.

Where the climate is cold and wet we should expect to find cone-bearing trees such as the fir and pine. Lumbering, then, must be one of the industries. There are many deep bays so that boats can go far into the land, get the lumber and take it to market. They do not send their lumber to us because we have plenty and the people that do need it live close by.

Since the land is mountainous, wet and covered with forests, what would you think about the importance of farming? We know that there is not enough wheat raised because Swedish and Norwegian ships come to San Francisco to buy it. Because of the wet climate the cleared farms are green with grass and there are a great many dairy cattle. We do not



The zebra inhabits the grassy uplands of Central Africa. It is related to the horse but it has never been fully domesticated and is of very little use to the natives.

buy their butter and cheese because we make enough of our own, and England, only a little distance away, takes all they have to spare. How interesting it is to watch the women and girls working in the hay fields. It rains so much that the hay will not dry if left on the ground. In order to cure it well, supports that look much like fences are built. On these the hay is piled so that the sun and air can get at it better and dry it more quickly.

Since the coast line is very broken, fishing is important, and a great many men are engaged in this occupation. But none of their canned or dried fish is sent to us because we have plenty of fish of our own.

The broken coast with deep bays and the abundance of trees have led to the building of ships. We all remember the stories of the Vikings and Norsemen and how bold and fearless they were upon the stormy ocean, and in combat with their neighbors to the south. Now the thousands of fine Swedish and Norwegian ships are not engaged in fighting but in carrying goods in all parts of the world.

Now it is easy to understand why the products of Norway



The people of Norway are expert sailors and fishermen because their country has so many bays and islands. Wherever you travel along the coast you see fish strung up to dry.

and Sweden do not come to San Francisco and also why many of their people make their homes in our own pleasant land.

16. What does Australia ship to San Francisco? We can reach Australia by sailing southwesterly across the Pacific Ocean. We pass the Hawaiian Islands first, then many coral islands covered with palm trees, and at last, when one-third of the distance around the world, we come to the land we are seeking. On the globe this land appears like an island, but as it is so large it is usually called a continent.

What are some of the things Australia sends us? First and most important is wool. From this we conclude that Australia must be a grazing country, where roam vast numbers of sheep. If we are at the wharf when a cargo is being discharged, we shall find that beef is also one of the important productions. While we raise many cattle in California, there

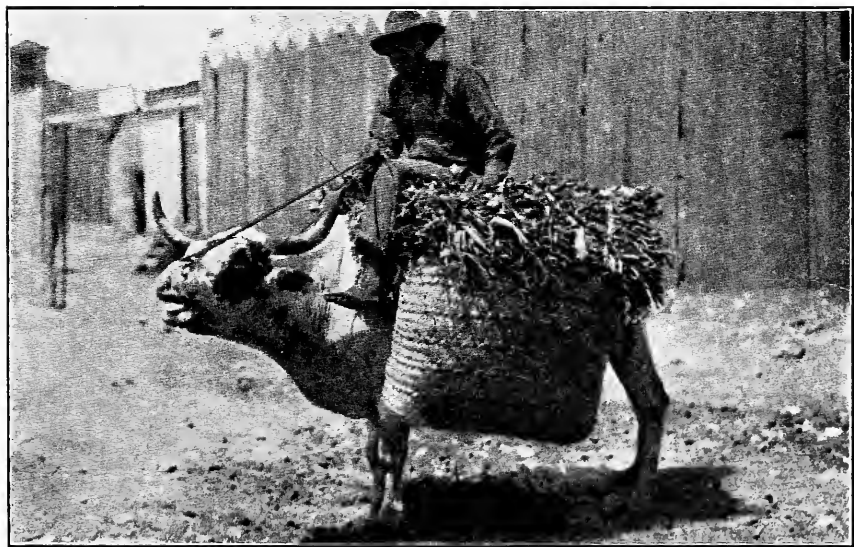


These negroes of Central Africa are sitting by the door of their round hut. You can see how crudely it is made. The Bushmen of Australia are wilder and have fewer comforts and poorer shelters than do these negroes.

are not enough for our own use and so we have to buy of those who have more than they need.

Australian coal also comes to San Francisco. That land has coal to spare and we have very little. We do not often get wheat, since we raise so much in our own land. But during the Great War wheat was shipped to San Francisco, here to be made into flour and then sent on to England. This was because of the danger from submarines in the Mediterranean Sea.

Our apples ripen in the fall, and by spring, unless they have been kept in a cold place, they are all gone. Late in the spring, however, when our apples are gone, we sometimes get fresh apples from Australia. How can this be possible? In going to Australia we finally leave the cool belt in which we live and enter the hot belt. By the time we have reached the southern part of the continent we have crossed the hot belt and find ourselves in the southern cool belt. When we are having summer it is winter in Southern Australia, and when we have spring it is fall there. Their seasons are just the opposite of ours, and so their apples ripen at the time our trees are blossoming.



Would not a pack animal like this be a funny sight in our country? In Mexico it attracts no attention. After filling the bags as full as possible with tobacco leaves the driver climbs on the top.

Australia is a strange land. When white people first went there they found dark, curly-headed natives who looked much like negroes. These natives are called Bushmen. They are among the most ignorant of all the wild inhabitants of the earth.

In Australia there are none of the great animals that abound in Asia and Africa. The largest native animal is the kangaroo, which we often see in zoological parks. It has long hind legs for leaping and a pocket in which the little ones are carried for some time after they are born.

Australia has furnished us valuable trees. Among these are the acacia and the eucalyptus.

17. **A Pacific Coast Steamship brings Mexican products:** We do not have very much to do with our neighbors, the Mexicans and the Central Americans, who live to the south of us. This is strange because, being farther south, their lands ought to have a tropical climate. They should raise many fruits that grow only in the hot belt and we should send them many products from our more northern and cooler land.



A country scene in Central America where the workers upon the plantations have gathered in their best clothes for a holiday.

The reason we do not get many things from our southern neighbors is that they have been too busy fighting among themselves to give much attention to improving their lands and to trade.

What is the steamer unloading? First come bunches of bananas from Central America, and then boxes of limes. There are many bales of hides, for these countries raise large numbers of cattle on the higher cooler slopes. There are also bags of coffee, crude rubber; tobacco, indigo and great logs of rosewood and mahogany. Thus you see what a variety of products come from Mexico and Central America and how important our trade with them ought to be.

If you could take a journey through the highlands of Mexico you would think you were in Spain, from which country came, as you will remember, the first settlers of California. The homes are made of stone or adobe, as in Spain, and in the country villages you will find that the dress and customs of the people are very much like those of their old home in Spain. Most of the Mexicans are, however, darker than the Spaniards, because they have mixed more or less with the Indians.



The heavy wooden carts drawn by oxen used to be seen in California when the land was a part of Mexico. The same slow methods of transporting farm products are still used in Mexico.

We may say, then, that Mexico is a second Spain. It is very interesting because our own California once formed a part of it.

18. Why do we trade so little with Russia, the largest country in the World? We have already learned something of China, the country that contains the most people of any in the world, and why we have an important trade with these people. Let us now try to find out why we have so little trade with the largest country in the world.

We search the wharves and look through the markets and stores without finding anything from Russia except a few furs. We turn to the globe and discover that Russia is a vast region. It takes in all of Northeastern Europe, and the part known as Siberia includes all of Northern Asia. A land so large must contain many people and ought to have an important trade with other countries.

Perhaps the lack of trade with us is because travel between the two countries is difficult. The globe or map tells us, however, that we can reach Russia by water from four different directions. We can go directly across the Pacific to



This is a home upon the great plain of Central Russia. It is more attractive than the treeless prairies to the south or the dark pine forest to the north.

Eastern Siberia, and from our port of landing, Vladivostok, a railroad will take us to the heart of Russia. We can go to Constantinople by the route we have already traversed and, entering the Black Sea, reach Southern Russia. We can go eastward across our country to New York, or by boat through the Panama Canal, then sail northeastward across the Atlantic until we round the northern point of Europe and, entering the White Sea, reach Northern Russia. Or, finally, we can sail from New York across the Atlantic and, passing by the British Isles on the right hand and Sweden and Denmark on the left, enter the Baltic Sea. Now we can easily reach Petrograd, once the capital of Russia.

The furs that we get tell us that the northern part of Russia must be in the cold belt. Central and Southern Russia ought, then, to be in the temperate belt and have a climate like our own country. The map also tells us that the country consists of vast plains with only a few mountains.

From these things we can form an idea as to what the chief occupations of the Russians are. In the first place, most of them must be farmers. In the second place, they probably raise great quantities of wheat, barley, oats, cattle and horses on their vast plains.



A wedding procession in Russia.

From this we see that Russia raises the same things that we do and there could be little trade in farm products. Russia sells her spare wheat and barley to her neighbors and gets from them most of the manufactured articles she needs.

We excel all other nations in the manufacture of farm machinery and this we sell to Russia in large quantities. In addition to furs we get from Russia a great deal of platinum. This metal is now more valuable than gold; Russia has richer mines of platinum than any other country.

HOW IS IT THAT WITH EACH SUCCEEDING YEAR THE PEOPLE OF CALIFORNIA DEPEND LESS UPON THE PRODUCTIONS OF OTHER LANDS?

1. **We are learning more about our wonderful California home:** We have been a long time learning how many different things will grow in our own home land. The many climates, the rich soil and the water for irrigation make it possible for us to produce almost every kind of plant except those of the hot belt.

The early Spanish settlers made little use of the rich soil, the warm sunshine and the many streams. Neither did many of the gold seekers care to try farming as long as they could find gold in the beds of creeks.

But since the railroads have been built and we can send our products to distant markets, and since we have learned what wonderful things our California soil and climate will produce, farming and fruit growing have become the great industries. In order to still further enrich our productions men are searching through all parts of the world for new fruits and grains.

2. **We raise all the fruits, grains, and vegetables of the temperate belt:** In the valleys of the southern part of our state it is as warm in summer as it is in the hot or tropic belt. On the tops of the highest mountains it is as cold as it is in the arctic belt. Between these belts lies the temperate belt. Because of the position of the mountains, the direction of the winds and the presence of the ocean to the west fruits of the temperate belt grow in almost all parts of California.

Among the productions of the temperate belt are apples, pears, peaches, apricots, prunes, barley, rye, corn, wheat, potatoes and melons. Some of these things do better in the warmer valleys and some in the cooler ones. Strange, is it

not, that many of our temperate fruits do well in the very hot valleys where the sub-tropic fruits are found.

3. We grow all the fruits of the Sub-tropic belt: By the *sub-tropic* belt we mean a belt between the temperate belt and the tropics. The people who first settled California came by way of Mexico from far-off Spain. The Spaniards brought with them seeds of the fruits which they grew at home and that is the way the fruit industry began in our state. They found that the valleys here had much the same climate as that to which they were accustomed. They built irrigation ditches, plowed the land, planted the seeds and soon had thriving gardens and orchards.

Among the sub-tropic fruits which the Spaniards brought are the orange, lemon, fig, olive and grape. The market in the eastern part of our country is still partly supplied from Spain because we do not as yet raise enough fruit in California.

4. We grow some tropical fruits: The dates which you commonly see in the market come from Arabia, far away on the other side of the world. There are other dates of a better quality that you rarely see. These are grown in the oases of the Sahara desert.

Sprouts of the date palm have been obtained from these oases, and planted in one of the hottest deserts in southeastern California. They have thrived there and are now producing as good dates as are found in any part of the world. Does it not seem strange that the date, which forms one of the chief foods of the Arabs of the desert can be grown here in California.

It may be found possible to grow other tropical fruits in our hot valleys.

5. We raise large quantities of rice: We once imported all our rice. Some came from the Southern States, but most of it was brought across the Pacific Ocean from China and Japan. Rice needs a deep rich soil, hot climate and plenty of water. All these things are found in the Great Valley of California.

A few years ago a little rice was planted as an experiment to see if it would grow in the Sacramento Valley. It did so well that the next year more was planted and now many thousands of acres are being grown. Every year land devoted to rice becomes greater. We shall soon be able to supply all the rice that our country needs.

6. **We manufacture sugar from sugar beets:** Sugar cane grows in a hot moist climate. The valleys of California are hot enough but the air is too dry. All the cane sugar that we use comes from the Hawaiian Islands.

We have, however, a climate well suited to the growing of sugar beets. They need a light but moist soil and will do well either near the coast where it is cool and foggy or in the hot valleys behind the coast mountains.

7. **Cotton is becoming an important product:** All our cotton once came from the Southern States, but now we raise a great deal in California. In the far southeastern corner of our state is a valley once known as the Colorado desert. It was so dry and hot that it was dangerous to cross in the summer and many people have perished there. Now great canals lead water to this desert and it has become one of the richest parts of our state. Cotton growing was tried and the plant did so well that many thousands of bales are produced each year. Cotton in such large quantities is now being grown in the hot



California is growing so much rice that we no longer have use for that raised in China or Japan. Would it not be strange if with the aid of machinery we could raise enough rice to export it to those lands where we once bought it?

valleys of our own state that we may soon be able to sell to our neighbors.

8. Cattle and sheep raising was one of our earliest industries: Stories of early life in our state tell of the great numbers of cattle and sheep. After gold was discovered and many thousands of people had made their homes here the hills and valleys were used mostly for pasturing cattle.

More and more land is being cultivated every year. As we fence and plow the fields the wild pastures must become smaller. The cattle industry has decreased in importance and we now have to import a part of the beef, mutton and pork that we use. In order to raise greater numbers of cattle, sheep and hogs we must grow more forage such as alfalfa and corn. Animals can get more food from a piece of cultivated land than from wild pastures.

9. We raise silk worms and spin silk: Our California climate is suited to the growing of the mulberry tree, on the leaves of which the silk worm feeds. The mulberry tree is also valuable for its fruit. We do not raise many silk worms because the people of Southern Europe and Western Asia do this work cheaper than we can. Sometime we may be able to produce silk cheaply, but now it is better to buy it.

10. The shallow waters off the California coast form a fine fishing ground:

Look at the map of California and you will find that there are quite a number of islands off the southern coast and a group of very small ones a few miles outside of San Francisco.

The water of the ocean is shallow as far out as these islands, making a good home for a great variety of fish. Outside of the islands it becomes very deep and contains few food fishes. California has, then, a rich fishing ground which might supply us many more fish than it does if we only went after them.

11. We have great stores of petroleum: Nature has given California almost every mineral she needs except coal. The lack of coal made it difficult for many years to carry on manufacturing.

Now we have discovered vast stores of petroleum which is well suited for use as fuel. The petroleum not only supplies fuel for engines, but when refined is used for lighting pur-

poses. From the crude petroleum we also obtain gasoline and grease for lubricating purposes.

12. We have gold, silver, copper and iron: It was the discovery of gold that first made California famous. Everybody wanted to go to the "land of gold." While seeking this valuable yellow metal the prospectors found veins of other minerals. Among these are silver, copper and lead. Mention some of the uses of each of these minerals.

13. In the deserts are salt, soda, borax and potash: In the hollows of the hot and barren deserts in eastern California there were once large lakes. In some of them little lakes still remain but the most are now dry. How salty and alkaline the waters of these lakes must have been, for in their beds we find valuable deposits of many salts, among which are common salt, soda, borax and potash. Tell an important use of each of these substances.

14. Vast forests cover the mountains: The forests of our state are among the finest in all the world. Wherever we find high mountains there we may look for forests. What have we learned is the reason for this?

We have been very careless of the forests and have allowed them to be wasted by lumbermen and fire. Since they are useful in so many ways we should guard them with the greatest care.

15. We have great and fertile valleys which as yet contain few homes: The chief wealth of our California home lies in the soil. It will not do to be careless of the soil. Each year we should return to it in the form of fertilizers the substances taken away by the crops. We should also guard the slopes against washing by the rains. We may some day dig all the minerals out of the rocks, but no matter how much use we make of the soil it will always remain fertile if we take care of it.

THERE ARE SOME THINGS THAT CALIFORNIA DOES NOT SUPPLY.

We have learned already that there are many fruits found in the hot belt that cannot be made to thrive in California. We have use for some minerals that our mountains do not contain. We import from other countries manufactured articles which are unlike any we make. The people of each country

excel in some particular kind of work. We make certain things better than any other people. Certain other things we cannot do as well as people living in countries far across the ocean. We need their goods and they need ours. This leads to trade between us.

IT IS BEST THAT WE CARRY ON TRADE WITH OTHER PEOPLES.

If we would sell to other people we must buy of them in return. By dealing with neighboring countries we become better acquainted and are less likely to quarrel. Each learns to respect the other through inter-change of products and ideas.

The more people, living far apart, trade and associate with one another the more they come to feel like brothers.

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